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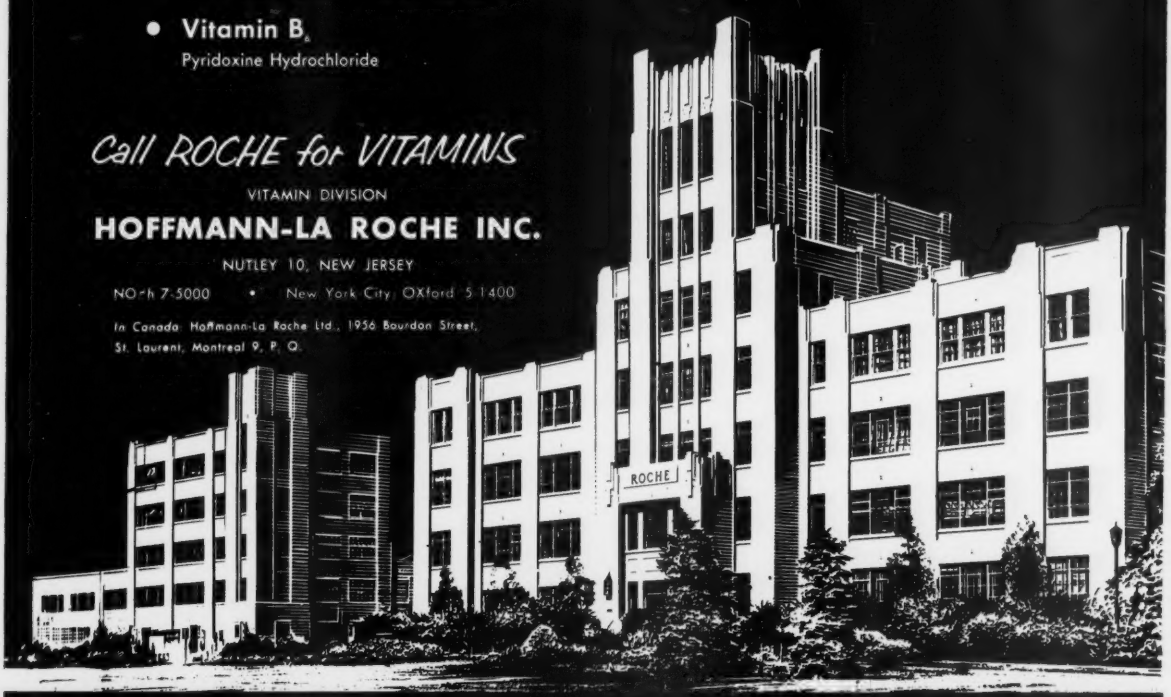

PURITY — QUALITY

Drug and Cosmetic Industry

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SPEAKING FROM ENGLAND

JOHN BERNARD WILKINSON, B.A., B.SC., F.R.I.C. *became Research Manager of the Toilet Preparations Development Unit of Unilever Ltd., in June, 1957. Before taking up his present appointment, he had been, successively, technical director of Joseph Watson and Sons Ltd., Leeds, and technical director of A.&F. Pears Ltd., Isleworth. He is a member of the Council of the Society of Cosmetic Chemists of Great Britain and was one of the two British delegates to the International Federation of Societies of Cosmetic Chemists.*

Glycerine IN SKIN CREAMS AND LOTIONS

In considering the formula for a toilet product, we must look at the product as a whole, including the package, against the envisaged uses of the product as a whole, not just at a single ingredient in isolation. To do otherwise can lead to trouble, both in the plant and in the home.

This becomes very obvious when consideration is given to a 'special ingredient', such as a germicide, added to a product of basically simple use pattern such as a soap, toothpaste or a shampoo. At one extreme, the main object of the operation is to provide a vehicle for the germicide or other special ingredient; in this case the product is built round the active principle and is designed to permit its application and working under optimum conditions. At the other end of the scale, the formula is modified as little as possible from the optimum for its main function so as to permit it to carry the 'plus' ingredient to the greatest advantage. Between these extremes lie clearly many compromises.

Both extremes point the moral that, although one may begin by considering the virtue and properties of one ingredient, the good formulator soon starts thinking in terms of the product as a whole in relation to its projected use. Therefore when we come to the question of glycerine in skin creams it is first necessary to consider the products in question and their uses. For the purpose of discussion, I have confined myself to the product types in Table I, taken generally from European practice, and covering in principle most products generally considered as skin creams or lotions.

Examination of this table, together with the 'characteristics' in Table 2, coupled with the general principles of cosmetic formulation, shows several common ideas behind the formulation of all these creams and lotions. Now consider the role of glycerine as a part of the formula for these product types in the light of the requirements for consumer use. Only when this has been done, is it possible to embark on the preparation of type formulae for the different product classes in a logical manner.

Product Properties

1. Drying-out. There is a general requirement for slow drying-out of the product in the jar. For the general purpose creams, the small sizes of which are often packed in slip-lid cans, this is made possible by use of a water-in-oil emulsion. Typical results below obtained in our laboratories show both the effect of glycerine in a water-in-oil cream and the vast difference in behaviour of two different oil-in-water creams.

Cream Type	Weight loss % in 1 week at 37°C.
General purpose cream (w/o) A (no glycerine)	6.2
" " " " A (+4% glycerine)	3.9
Compare with:	
Vanishing cream (o/w) B	34.8
" " " C	74.0

But, for all types of cream, storage before and during use demands minimisation of water loss. However perfect the closure design, we have to contend with casual deficiencies and incorrect reclosure by the user. Under the worst conditions, cavities can be produced in some types of cream, no-

TABLE I—THE PRINCIPAL TYPES OF SKIN CREAM AND LOTION

Product	Emulsion Type	Phase Proportions		Main Uses
		% oil phase	% water phase	
Foundation Cream	oil-in-water	15–30	70–85	As a foundation for face powders. May also provide colour by means of pigments or soluble dyes.
General Purpose Cream	water-in-oil	35–45	55–65	Foundation, cleansing and skin care; a compromise in efficiency between its various uses.
"Nourishing" Cream	water-in-oil	35–45	55–65	Includes creams containing special ingredients such as hormones.
Cleansing Cream	water-in-oil or oil-in-water	50–65	35–50	Removal of make-up and cleansing of face at night. Normally used in association with tissues.
Night Cream	water-in-oil	65–90	10–35	Overnight treatment, particularly as a corrective for dry skins. May also be used for massage.
Cleansing lotion/milk	oil-in-water	10–30	70–90	Removal of make-up during day. Applied on cotton wool.
Hand cream/lotion	oil-in-water	5–20	80–95	Treatment of dry hands or those damaged by work.
Skin lotion	—	—	100	Astringent or emollient; also a source of fragrance.

tably the traditional, aerated, vanishing cream and in some others a surface crust may form, which then restricts further water loss but is objectionable and unsightly.

A humectant can play a part in reducing these troubles, but do not exaggerate its possibilities. Typical water phases contain nowhere near the glycerine content required for them to be in equilibrium even with higher atmospheric humidities. Added glycerine can however restrict transfer of water vapour to the near-saturated atmosphere above a partially-closed jar and undoubtedly reduces the rate of loss of moisture. Henney, Evanson and Sperandio[1] have published comparative figures for several humectants and point out the influence of water content, humectant content and humidity. Evidence has been given by Rovesti and Ricciardi[2] that sorbitol is more effective in reducing rate of loss of water, but it must be remembered that this is only one of the properties required from a humectant.

In all creams some degree of control in use is necessary, despite the fact that the water content is ultimately required to disappear. In use, the water is either given up to the skin to restore lost moisture (see below), or, having done its job of giving fluidity and spreadability, it dries out onto the atmosphere; in neither case is it desirable for the water phase to disappear too quickly.

2. Skin humidification. The pleasure of a smooth, supple skin and the dislike of a dry-feeling hard skin have been appreciated by the non-experts from time immemorial. The credit goes to Blank[3] for stating clearly the connection between the feel of the skin and its water content. For finding simple practical ways of alleviating the less serious conditions, credit goes to the cosmetic industry, but, it must be admitted, largely by empirical methods. But to-day, with new knowledge, heavy emphasis is being placed by the beauty profession on 'moisturising' with a partial understanding of the old empiricism.

The presence of a humectant in the water-phase would be expected to stabilise the water content during the later stages of absorption or drying-out; and glycerine should fulfil this role well, although satisfying experimental proof is still lacking. The difficulties of work in this field have been well brought out by Powers & Fox[4] and we must surely support their conclusions that 'a great deal of additional study and work will be required'.

3. Lubrication. With all creams and lotions, good spreading is required not only initially but also sometimes during a prolonged working-in. Aqueous glycerine of all strengths provides a subjectively very acceptable medium and has the added advantage of good compatibility with other ingredients; in particular it can help to prevent 'balling' and 'rolling' when these properties are not desired[5] as suggested by Kalish. Furthermore, in lotions, glycerine can provide unctuousness without oiliness; this is of particular advantage in some more specialised products such as after-shave lotions and sunscreens.

4. Viscosity of Water Phase. The lubricant properties of glycerine solutions are allied to those of providing suitable increases of viscosity. For aqueous or aqueous-alcoholic lotions, the viscosity is often required to be controlled at a high enough level for ease in use. In emulsions, the viscosity of the continuous phase plays a part in providing a satisfying 'body' to the product, and especially in the thinner lotions and milks, glycerine can provide this adequately.[6]

5. Emulsion Stability. In emulsified products ingredients giving lubricant properties or increasing the viscosity of the water-phase must not prejudice emulsion stability. Glycerine certainly does not do so. Indeed we believe that in some complex emulsion systems, it may positively promote stability, especially where monoglyceride is used as one of the emulsifiers. In less complex emulsions, increase in stability through glycerine addition may be due solely to an increase of viscosity at the interface.

6. Perfume Stability. All ingredients in a cosmetic must be selected to have the minimum deleterious effect on perfume stability. Glycerine is certainly sufficiently non-reactive to meet this neutral requirement; indeed, probably by virtue of its solvent powers and low vapour pressure, it has some fixative action and is a valuable adjunct for this reason alone.

7. Safety and Mildness. Of necessity no ingredient can be employed which is not safe on the skin in the proportions used, both as in the formula and after drying-out or absorption (a point which is often overlooked). Glycerine meets this requirement.[7]

The hygroscopic nature of pure glycerine has been held to be a disadvantage on the grounds that it might draw water from the upper layers of the skin in order to reach its appropriate equilibrium. (See Powers & Fox[4] and Rovesti & Ricciardi[2]) This seems to me irrelevant since the equilibrium is always approached from the other side.

The relative humidities of the atmospheres in equilibrium with various strengths of glycerine/water solutions are given in a graph by Miner & Dalton,[8] from which the following round figures are taken:-

% glycerine	Relative Humidity
65	70%
80	50%
90	30%

Thus for instance, even in a 70% R.H. atmosphere in the immediate neighbourhood of the skin, the glycerine solution would need to be initially stronger than 65% before it became hygroscopic. Such concentrations are never used in practice,

TABLE 2—FORMULATION OF SKIN CREAMS AND LOTIONS

Product	Required Characteristics	Typical Ingredients		
		Oil Phase (%)	Water Phase (%)	Emulsifier
Foundation Cream	Must spread easily and give a smooth, non-oily film to hold powder: may be tinted or untinted.	(1) Traditional "vanishing cream" type Stearic acid 13–20	Glycerine 8–10	Potassium or triethanolamine stearate formed in situ.
		(2) Neutral Formulation Waxes or cetyl alcohol 5–10 Mineral oil 10–15	Glycerine 2–5	Polyethylene glycol/cetyl alcohol ether.
General Purpose Cream	Must spread easily and "moisturise". Has fairly fluid oil phase but must not be subjectively too "greasy". Must not dry out too easily if to be packed in slip lid can.	Mineral oil and petroleum jelly 25–30 Lanolin 2–3	Glycerine 5	Wool wax alcohols and/or cholesterol. Nonionic emulsifiers
Nourishing Cream	"Moisturising" quality required, especially if special ingredient is in water phase. Formula must be compatible with any special ingredients used.	A wide range of formula is possible, but generally avoiding extremes. Many of these products may have bases similar to the general purpose creams.		
Cleansing Cream	Must spread easily, be an efficient cleanser and remain oily on skin. Must not dry out in jar as large packs are often used.	Mineral oil 25–35 Lanolin 5–10 Waxes 3–10	Glycerine 5	Wool wax alcohols Nonionic emulsifiers

and until we have further knowledge of dynamics of water transfer process at the skin surface, there seems no reason for doubting the traditional safety of glycerine.

8. Antiseptic Properties & Preservation. Many toilet preparations to-day have antiseptic or even germicidal ingredients added to them—a matter on which comment must be left for another place and time—but the addition of preservatives is almost universal; the need for this has largely arisen from improvements in cosmetic formulation. Many of the older creams made with saponaceous emulsifiers needed relatively little preservation because they provided a mildly hostile environment for most microörganisms; unfortunately these creams were also mildly irritant to a few sensitive people. Products to-day tend to be "kind to skin—kind to bacteria", and we have thus new and sometimes severe problems of preservation on which much has already been written elsewhere. (Particularly see 'American Perfumer' Documentary on Preservatives and Anti-oxidants, January & February issues, 1959.[12])

It is thus a desirable feature of any ingredient chosen for other purposes that it shall also have some antiseptic or bacteriostatic properties.[13] Barr & Tice[9] have shown that most humectants have such properties but only at concentrations high enough for a presumed cosmetic action to be effective, such concentrations occur in toothpaste formulae, but not usually in skin cream water phases. However we do know that glycerine does not inactivate preservatives, which is more than can be said for many ingredients.[13]

Product Formulation. The principles of product formulation require us to select ingredients firstly for their positive qualities given the required properties and secondly for their neutral qualities of non-interference with the remainder of the system. It thus becomes clear that it is advantageous to include glycerine in substantially all skin creams and lotions at levels to be chosen according to requirements. Omission of glycerine or use of other humectants and/or thickeners can provide different properties which may in some particular instances be desirable, even at the expense of other desirable qualities, but these specialised cases cannot be dealt with in a generalised study such as this.

Every cosmetic chemist will have his own formulae for the products with which he is particularly concerned, but it may be helpful to give skeleton formulae for each of the product types given in Table I if only to indicate the levels of glycerine recommended. Most of these are to be found in various forms in published sources and all are well established in practice with their appropriate perfumes and colours; all formulae must always be read with the reservation that perfumes and colours, as well as details of manufacturing technique, can affect some of the properties, notably stability, appearance and texture. Many variations are possible on these skeletons particularly by use of various branded emulsifiers and emulsifier combinations, for information on which current literature should be consulted. The figures given in Table 2 are only quoted to indicate the different glycerine levels which have been found to be effective in practice and not to provide a complete cosmetic formulary.

SUMMARY. Consideration has been given to the user properties and requirements of the principal categories of skin creams and lotions. It has been shown that the properties of glycerine as an ingredient are such as to make its inclusion very desirable in products of this type. An indication is given of suitable proportions of glycerine in various types of product. A list of references is available upon request from the Glycerine Producers' Association.

TABLE 3—TYPICAL INGREDIENTS

Product	Characteristics	Oil Phase	Water Phase	Emulsifier
Night Cream	Firm consistency required if used as massage cream; should have "moisturising" properties.	Petroleum jelly and mineral oil 20–30 Waxes 10–15 Lanolin 5–10	Glycerine 2–5	Beeswax-Borax
Cleansing lotion/milk	Viscosity depends on intended method of use. Must remove make-up efficiently and should not leave the face too greasy.	Mineral oil 5–25 Waxes 1–5	Glycerine 3	T.E.A., stearate or oleate in situ.
Hand cream/lotion	To be "moisturising" and must spread well and not leave hands too greasy.	Lanolin 1–2 Cetyl Alcohol or waxes 2–5 Mineral oil 3–10	Glycerine 5–8	T.E.A. stearate
Skin lotion	Good control of spreading may be required in addition to specific properties such as emollience, astringency, etc.	—	Glycerine 5–25 Alum if required Gums to required viscosity	—

In all cases, water to 100 after inclusion of emulsifier, perfume and preservatives.

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COMPLETE INFORMATION

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NOTHING TAKES THE PLACE OF . . .

Glycerine

"But, Doctor, you haven't seen a patient in three days!"

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Keeping Posted

Direct Selling Correction

Direct Selling Incorporated, Laguna Beach, California, informs us that there were errors in our statement regarding the firm in our news story on page 31 of our January issue. The errors are best explained and corrected by quoting the following paragraphs from a letter we have received from Direct Selling president Luther G. Hester:

"The main difficulty with the notice is the statement that Direct Selling Incorporated is a cosmetic firm. We are not handling cosmetic products as such, and we are not handling any products which are in competition with Edith Rehnborg Cosmetics or Nutrilite Products, Inc. . . . We are a marketing organization handling a number of products which lend themselves to the direct selling method of distribution. We are *not* a cosmetic organization.

"The other part of the notice that is very damaging is the statement that when Nutrilite Products, Inc., turned over its sales of Edith Rehnborg Cosmetics to Mytinger & Casselberry, Inc., we left Nutrilite Products, Inc. to form our own cosmetic company. This is not true. Our company became a corporation on September 4, 1959. Mytinger & Casselberry, Inc., took over the sales of Edith Rehnborg Cosmetics on December 1, 1959."

Bufferin and Ban Loom Large

Bufferin and Ban account for 50 per cent of the sales, and close to 70 per cent of the profits of the Bristol-Myers Products Division, according to a talk given by an official of that division.

At Least Nine New P.D. Drugs

Parke, Davis & Company will introduce at least nine new drug products in the fields of steroids, enzymes, tropical diseases, epilepsy, and others, Harold W. H. Burrows vice-president recently told the St. Louis Society of Financial Analysts.

Soaps and Synthetic Detergents at Peak

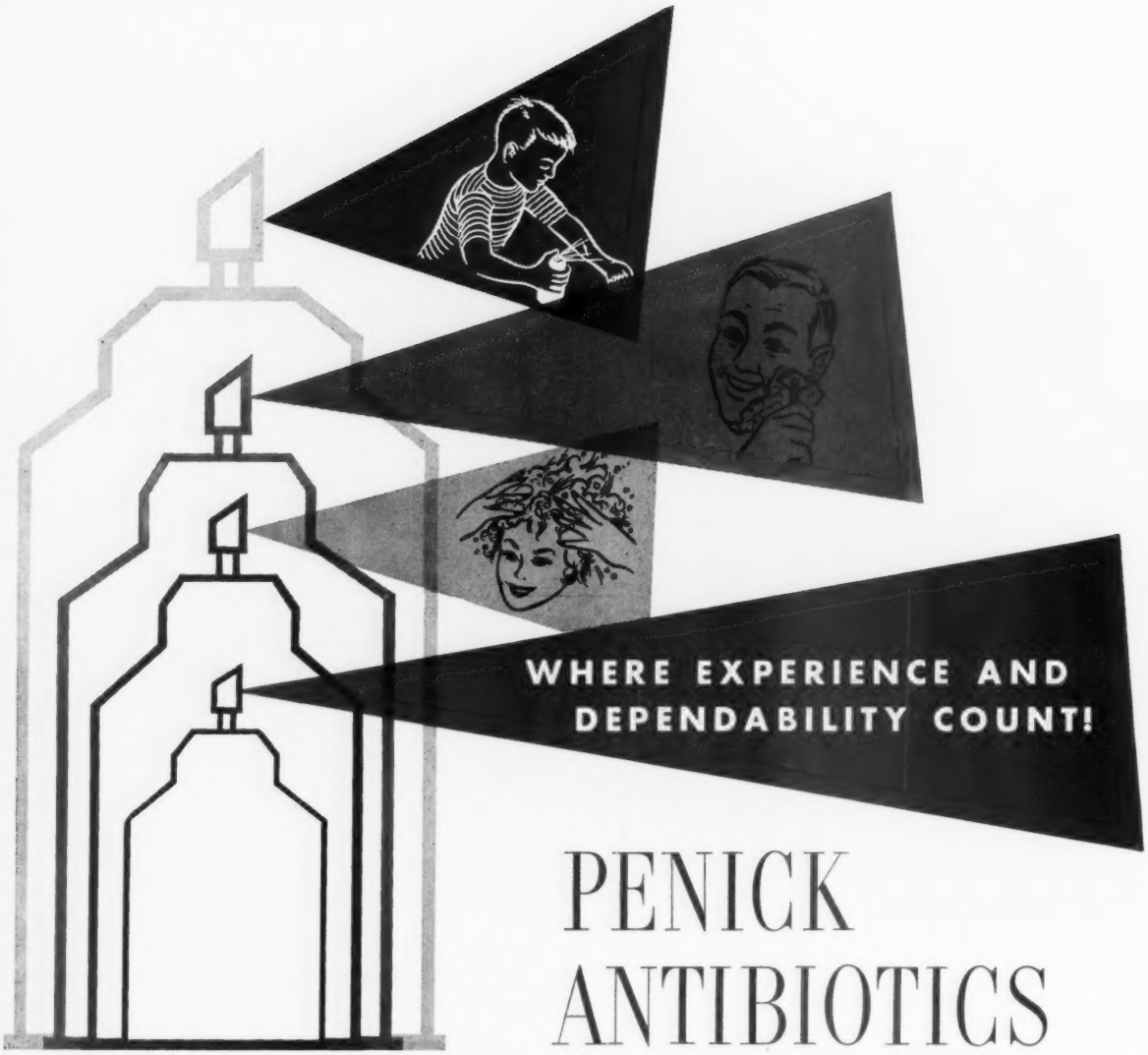
Soap and synthetic detergent sales reached a new high in 1959, according to the Association of American Soap and Glycerine Producers, Inc. Sixty-two manufacturers, representing a substantial portion of the industry, reported sales of 4,269,877,000 pounds, valued at $1,093,450,000, up 4.4 per cent in pounds and 5.1 per cent in dollars from 1958.

Synthetic detergent sales totaled 3,203,437,000 pounds, valued at $774,230,000, an increase of 8.5 per cent in pounds and 8.1 per cent in dollars over 1958. Solid synthetic detergents totaled 2,637,269,000 pounds, valued at $571,329,000, a 4.6 per cent rise in quantity and a 3 per cent increase in value. Liquid synthetic detergents, continuing their sharp sales expansion, totaled 566,168,000 pounds valued at $202,901,000, an increase in weight of 31.4 per cent, and in value of 25.9 per cent from 1958.

Soap sales were 1,066,440,000 pounds, valued at $319,220,000, against 1958 figures of 1,138,148,000 pounds, valued at $324,802,000.

Strict Laws Cut Ohio Narcotics

U. S. Narcotics Commissioner Harry J. Anslinger's contention that severe legal penalties will reduce illegal traffic in narcotics has apparently been borne out in the State of Ohio. New, strict laws enacted by Ohio in 1955, and carrying penalties up to life imprisonment, have "practically stamped out" the illicit traffic in that state, which is now down about 90 per cent, according to Albert Cook, agent in charge of the Federal narcotics office in Cleveland. Prior to enactment of these new laws, Ohio ranked "about fifth" in violation throughout the country, while now "statistics show Ohio has practically fallen out of the



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figures altogether," he added. Furthermore, during this time the Federal Bureau of Narcotics has reduced the number of agents in Ohio from 18 to three, and has closed two of its offices, one in Columbus and one in Toledo.

Two years after the laws were enacted a Columbus man was sentenced to 122 to 255 years for selling heroin. The most severe penalties are for narcotic offenses involving minors. A 30-year to life penalty is provided for unlawfully dispensing or administering a narcotic to a minor. To induce or attempt to induce another to use a drug unlawfully, to employ a minor in the illegal drug traffic and to induce a minor to use drugs illegally calls for a ten to 25-year sentence for the first offense, and 25 to 50 years for a second offense.

Illegal sale can result in a 20 to 40-year sentence. Illegal possession and conspiracy to violate the laws bring sentences up to 40 years for third offenders. The laws also cover theft of drugs, obtaining a prescription from one physician while undergoing treatment and receiving prescription drugs from another, and having illicit relations with another person, knowing that person to be under the influence of drugs. The maximum penalty for this is 30 years for the third offense. Courts are prohibited from placing persons convicted of most of these offenses on probation.

Medical Education Industry Contributions

The pharmaceutical industry contributed $374,510 to the National Fund for Medical Education for 1959, according to John E. McKeen, chairman of Drug and Chemical Division of the Fund. An increase of almost $150,000 over 1958, the drug contribution topped all others and brought the industry total to $1,630,015 since the Division was established in 1953. The higher industry total was attributed to a rise in the number of contributing companies and to larger gifts from many of the 54 individual firms. Among the major firms to contribute more than $25,000 were Johnson & Johnson, American Cyanamid Company, Eli Lilly and Company, Merck & Co., Parke, Davis & Company, Chas. Pfizer & Co., and The Upjohn Company.

Corned Beef and Tumble Weed

From corned beef and quebracho extract, to such perfumes as Tumble Weed, Boots and Saddle, Clover Hay, Cafe Society, and others, might seem a strange way for a company to diversify, but this is just what International Products Corporation with extensive ranch holdings in Uraguay has done through the acquisition of Lorle, Inc. Charles A. Koons, president of International Products, said that "in the acquisition of Parfum Lorle we are moving forward in diversification of our business. To this new line of products we hope to add other products such as soaps, which can be produced from by-products of our packing plant and distributed through the facilities acquired in Parfum Lorle.

Originally founded in Paris in 1924, Parfum Lorle established its U. S. operations in New York in 1934 with manufacturing operations in Middlesex, N. J.

Abbott Challenges Revocation of Color Usage

Abbott Laboratories, in a petition filed in the U. S. Circuit Court of Appeals in Chicago, has challenged the right of the Food and Drug Administration to revoke usage of already certified lots of delisted, certified coal-tar colors. Paul Gerden, general counsel for Abbott, asserted that such revocations would be "arbitrary, unreasonable, and contrary to law." He said there is no authority, "expressed or implied" for such action in the Food, Drug, and Cosmetic Act. "There has been no showing of any conceivable hazard to the public health in the continued use of these colors," the petition contends. Filed against Arthur Flemming, Secretary of Health, Education, and Welfare, the petition states that "if on the basis of future evidence, any hazard were found to exist . . . respondent would have ample authority to prevent such use without ordering decertification of existing lots."

Abbott has on hand at all times large inventories of pharmaceutical preparations containing colors from batches certified under the Food, Drug, and Cosmetic Act, said Mr. Gerden, adding that such colors are of "vital importance . . . to product identification and diversification . . . as an aid in dosage instructions and directions for use . . . and as an integral part of product and package design."

Records and Radio for Doctors

Two new methods of communicating medical information to the doctor are coming into being. And both of these methods are to cost the doctor money. One method, relatively simple to understand, comes to the doctor every two months as a 12-inch, high-fidelity recording and an inserted synopsis with band-by-band identification of the record contents. This service, which is being distributed by Excerpta Medica Foundation, with offices in the New York Academy of Medicine building, will cost the doctor $25 for six records, or a year's subscription. It is stated that:

"The physician will hear on his record-player, at his convenience, the actual voices of leading scientists and practitioners of our time. He will be in attendance when these men present their works at conferences, congresses, symposia and special panels. These on-the-spot recordings are prepared under the direction and supervision of the editorial staff of the Excerpta Medica Foundation."

The chief editors are M. W. Woerdeman, Morris Fishbein, and Sir Heneage Ogilvie. Directors are Peter A. Warren and E. Van Tongeren.

The first recording, the April-May issue contains the following:

GRAMICIDIN CREATES PROFITS NOT PROBLEMS

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Your production and QC operations will benefit from the uniform activity of Wallerstein gramicidin. *Strength specs are realistic and are adhered to.* And because it is stable (dry or in solution, and even at sterilizing temperatures), no expiration dating is needed for products containing this potent topical antibiotic.

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Wallerstein can give *you* the fruits of its broad experience with gramicidin and tyrothricin. Your R & D men can build on this work and start profitable projects with *minimum delay.*

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Reports recorded in Munich, Germany at the IVth Congress of the International Cardiovascular Society; Reports recorded in Amsterdam from the Conference of the International Study Center for Rheumatic Diseases; The Transplantation of Organs, recorded in Moscow; Panel discussion, Your Ulcer Patient; and abstracts from the international literature.

The only commercial aspect of the publication is that advertising will be sold on the two inside covers of the folder containing the record.

The other method of communicating information to doctors is a closed-circuit FM radio system being developed by the Radio Corporation of America. This involves installation in the doctors' offices and waiting rooms of special equipment to pick up a program broadcast by the National Broadcasting Company. Doctors will pay $120 a year for the service, which will broadcast selected music to be heard both in the waiting room and in the office, as well as three medical information programs daily, which will be heard only in the doctor's office. However, the success of the plan appears to hinge on the support of pharmaceutical advertisers who will sponsor the three 15-minute medical information programs broadcast each day, and which will be repeated three times each week. When the medical information programs are broadcast, they will be broadcast only in the doctors' offices, the waiting rooms being automatically cut off.

The medical information programs are to be under the control of a medical editor, who will be a physician. Supporting him will be a managing editor, news editor, writers, and research personnel. Also there will be a medical editorial board of physicians of various specialties and from various geographical areas. So far this board includes: Dr. Chester Scott Keefer, dean of Boston University School of Medicine; Dr. Arthur C. DeGraff, professor of Therapeutic Medicine at the New York University Bellevue Medical Center; Dr. Edward Rosenow, Jr., acting executive director of the American College of Physicians; Dr. Harold A. Rusk, director of the Institute of Physical Medicine and Rehabilitation, New York; Dr. Frank M. Woolsey, Jr., of the Albany Medical College; and Dr. Joseph Garland, editor of the *New England Journal of Medicine.*

Plans call for introduction of the system in September to 16 marketing areas—Boston, New York, Philadelphia, Washington, Baltimore, Atlanta, Miami, Pittsburgh, Chicago, Minneapolis-St. Paul, Des Moines, Dallas-Fort Worth, Denver, Seattle, San Francisco, and Los Angeles. The total medical population of these areas exceeds 50,000, and RCA is guaranteeing advertisers that it will have 25,000 by September 5, when broadcasting begins.

The costs to pharmaceutical advertisers are described as astronomical, and far above the total advertising budgets of many companies. RCA plans to charge $338,000 for 52 15-minute broadcasts with three minutes of advertising in each broadcast. The cost of a similar 26-week contract is $212,000. Payment for advertising is to be at the rate of $8,100 for each program during the first 26 weeks, and at $4,000 for each program during the second 26 weeks. Of these payments, only $1,000 of each will be commissionable to the advertising agency, or only $52,000 of the $338,000, the balance being net to RCA.

RCA will manufacture, install, and service the equipment in the doctors' offices.

Onyx Products

Onyx Chemical Corporation, which has been planning a public offering of shares of common stock, reveals in a preliminary prospectus that it sells 20 per cent of its output to cosmetic manufacturers in the form of shampoo bases and hair conditioners, and 10 per cent to pharmaceutical manufacturers in the form of dentifrice additives. Products sold by the company are 29 alkyl sulfates, which comprise 31.6 per cent of sales; 35 quaterary ammonium compounds, comprising 20.9 per cent of sales; 17 alkanolamides, comprising 11.8 per cent of sales; 13 ethoxylated products, comprising 7.3 per cent of sales; and 21 resin polymers and catalysts, comprising 5.3 per cent of sales.

Sales volume of the company was $4,569,824 for the first 11 months of 1959, and $4,115,217 for the entire year of 1958.

A Daily Newspaper for Doctors

Still another method of saturating the doctor with information—and perhaps getting some of the money spent for advertising by the pharmaceutical companies—is the projected daily medical newspaper to be published by Medical Tribune, Inc., a subsidiary of Medical and Scientific Communication Development Corporation, under the name of the *Medical Tribune.* Beginning this month as a 32-page newspaper, the Medical Tribune will first appear in a Monday edition, then later in the year another weekday edition will be added, and, according to plans, sometime in 1961 it will go daily. The circulation will be free controlled, guaranteed to 150,000 physicians throughout the United States, and a drive is being made to develop a paid subscription circulation among members of the medical and ancillary professions. The paper will carry a limit of 20 pages of advertising of ethical pharmaceuticals.

It is said that the Medical Tribune will be serviced by more than 300 medical correspondents throughout the world and five news bureaus in New York, Washington, Chicago, San Francisco, and Paris. Arrangements have been made for the editorial services of the World Wide Medical News Service and Physicans News Service, Inc., who will be responsible for editorial content.

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pany located in Boston, has invested in the enterprise.

Perfumers Symposium

The Sixth Annual Open Symposium of the American Society of Perfumers will be held April 28 at 2:00 P.M. at the Essex House, New York. Following opening remarks by president Bernard Polak, and introductory remarks, the symposium chairman, the following papers will be given: A Modern Approach to the Evaluation of Bergamot Oil, by Fred C. Theile, Donald Dean, and Robert Suffis, of Shulton; Fragrance and the American Male, by E. R. Van Liew, of Givaudan-Delawanna; the Influence of Human Temperament in Odor Selection, by Alfred H. Moeller, of Noville; Pitfalls in Perfumery, by Dr. Oliver L. Marton, of Shulton; Perfumers and Patents, by Thomas Cifelli, Jr., of Richards and Cifelli; and The Abstract Concept in Perfumery, by Walter Lengsfelder, of Fleuroma.

Following Mr. Moeller's paper, Honorary Membership will be presented to Edward S. Maurer, F.L.S., M.R.Z.I., of London, by president Polak.

When all the papers have been delivered, a discussion period will be moderated by Frazer V. Sinclair, of Drug and Cosmetic Industry.

A cocktail hour and buffet dinner will follow the symposium. This is included in the registration price of $15.

Vick Buys Clearasil

Vick Chemical is acquiring Clearasil, Inc., White Plains, N. Y., sellers of the country's largest selling specialty products for treatment of pimples, blackheads and acne, including an antiseptic medication, a soap, and a lotion. During the past three years, sales of these proprietary drug products have increased 80 per cent, it is said. Ivan D. Combe, president, and founder of Clearasil in 1950, becomes a consultant to Vick on the operation and future development of Clearasil. Drug products other than those of Clearasil, Inc., which were previously distributed by Eastco, Inc., White Plains, N. Y., are not included in the sale. Mr. Combe, who was president of Eastco, will head another corporation to distribute these products.

Recent studies show that about 20 million adolescents —about 80 per cent of those between 12 and 21 years —have pimple, blackhead, and acne problems at some time, and this teen-age market is expected to grow by one-third in the next ten years.

Clearasil's operations will be integrated into the Vick Products Division, which markets the company's proprietary products. "The acquisition not only gives Vick the leading position in this large and rapidly-growing market," said Vick president R. D. Waters, "but it helps to expand Vick's year-round proprietary business."

The Kefauver Hearing

Senator Estes Kefauver ran into difficulty last month in attempting to continue his hearings on drug pricing. The difficulty arose from the fact that Senator Everett M. Dirksen (Rep., Mich.) minority leader of the Senate and a member of Senator Kefauver's subcommittee, objected to holding the hearings while the Senate was in session because he (Dirksen) wanted to be present during the Senate action on the civil rights legislation. The rule is that objection from any member of a committee is sufficient to halt a hearing. Therefore, Kefauver held the hearing for about an hour in the morning before the Senate convened, and then again at night after the Senate adjourned. The night session ran from 10 P.M. to almost 2 A.M. Senator Dirksen did not attend either the morning or night sessions of the committee.

The main witness at the hearings—which were finally adjourned indefinitely—was Austin Smith, M.D., president of the Pharmaceutical Manufacturers Association. Dr. Smith contended that drugs and medicines are bargains for the public in the present high-cost economy. "Americans would be paying a billion dollars more a year for drugs if the prices of medicines had gone up only as much as the total cost of living," he said. Drug prices rose only 3 per cent in the last ten years, while the average wholesale price of industrial products went up 22 per cent, he said.

The committee presented figures showing that only a few companies produced some of the major drugs, Senator Kefauver calling this situation a "remarkable degree of concentration" in manufacturing. "It's by far the highest concentration of any industry I have come across," he added.

Dr. Smith said he was not surprised by the figures, saying, "It only shows the companies are producing what is needed." He pointed out that the figures also showed what was typical of the American patent system. Saying that he had not had a chance to study the figures presented by the committee, Dr. Smith mentioned a study made by the National Industrial Conference Board, which, he said, was based on a 1958 report by the Kefauver panel. According to Dr. Smith, it said there was little cause for any conclusion that concentration in the drug industry had become a major problem. The figures in the 1958 report were based on fifty-one products—diabetic drugs, hormones, tranquilizers, sulfa drugs, vitamins, and antibiotics. Dr. Blair, the committee economist, said individual companies had accounted for all the production of twenty-seven of these drugs. Seven other drugs were produced extensively by two companies, he said, and nine were concentrated in three companies.

Dr. Smith issued a statement calling these figures "grossly misleading" because undue emphasis was given to the companies manufacturing medicinal chemicals in bulk, and no attention was called to the great preponderence of companies that buy bulk chemicals, process them into dosage forms, and sell them competitively.

With regard to expenditures for research Senator Kefauver said he had figures showing that the twenty-two largest pharmaceutical houses earmarked 6.4 per cent of their sales volume for research. Dr. Smith presented statistics indicating that the industry spends 9.5 per cent, as compared with 3.2 per cent for all other industries. In 1959, research expenditures amounted to almost $200 million. Dr. Smith said that despite the "staggering investment" which the industry puts into research, "the chance that any given research involving a new potential medicine will be successful stands at 2,865 to one against the manufacturer."

Two committee witnesses were Dr. Haskell J. Weinstein and Dr. Martin A. Seidell, both former medical directors of the J. B. Roerig Division of Chas. Pfizer & Co. Dr. Weinstein is now director of the Chest Hospital at the City of Hope, Medical Center, Duarte, California, and Dr. Seidell is now associate medical director of Riker Laboratories (Rexall subsidiary), Los Angeles.

Dr. Weinstein attacked chloramphenicol, and said that "more subtle hazards to the patient could be cited." "A good example," he continued, "are the anti-anemia preparations which in shotgun fashion are theoretically designed to treat anemias of all varieties. The very real danger to the patient is that such products have the potential of masking—until too late—very serious conditions, especially cancer." He said further that the doctors are being "brainwashed" and "seduced with gimmicks" in attempts to make them "loyal to particular companies or particular drugs, with relatively little attention being paid to the specific merit of the drug in question."

Dr. Seidell said he quit Roerig in protest against sales policies which, in his opinion, violated the ethics of the medical profession.

Chas. Pfizer & Co. answered these statements as follows:

"It is an unjust reflection on the medical profession to say, as Dr. Weinstein does, that doctors are being brainwashed or seduced. This charge we emphatically deny both for ourselves and for the industry of which we are a part. We deny categorically the criticism of our advertising and marketing practices.

"As for Dr. Seidell's alleged reason for leaving Pfizer, it is worth noting that he resigned only after an assistant received a promotion to which Dr. Seidell thought he was entitled himself."

Colgate Doctrine Fails Parke, Davis

The price maintenance activities of Parke, Davis & Company in Washington, D. C., and in Virginia were held to be in violation of the Sherman Antitrust Act by a 6 to 3 decision of the U. S. Supreme Court handed down February 29. This decision came in a government appeal from a lower court decision in favor of Parke, Davis, in which case Gerhard Gesell, of Covington & Burling, Washington, D. C., based his case on the Colgate decision of 1919. The Colgate decision held that the Sherman Act left manufacturers free to choose their customers, and that therefore it was legal to announce retail prices unilaterally, and then refuse to sell dealers who did not abide by them.

To stop price-cutting, Parke, Davis warned the price-cutting retailers that unless the cutting stopped, P.D. would refuse to sell them. Then the company warned wholesalers that if they sold the price-cutting retailers their supplies would be cut off. When these methods proved ineffectual, the company got one price-cutting retailer to agree to stop advertising his reduced prices —even though he still sold at these prices—if he could get supplies again. Other retailers also agreed to this plan. The non-advertising agreement lasted only a month when the price war started again. Parke, Davis then gave up trying to enforce retail prices because the Justice Department had started looking into the situation.

In the majority opinion, written by Justice Brennan, and concurred in by Justices Warren, Black, Douglas, Clark, and Stewart, it is said that P.D. went beyond "mere announcement" of prices "and the simple refusal to deal" and had employed other means to effect adherence to resale prices." The Colgate doctrine does not mean, said the decision, that the government must show an agreement to fix prices to show a Sherman Act violation. Pressures of various kinds by the manufacturer may take the case outside the Colgate exemption.

"If the manufacturer is unwilling to rely on individual self-interest to bring about voluntary acquiescence, and takes affirmative action to achieve uniform adherence by inducing each customer to adhere to avoid such price competition, the customers' acquiescence is not then a matter of individual free choice prompted alone by the desirability of the product."

In the dissenting opinion, written by Justice Harlan, and concurred in by Justices Frankfurter and Whittaker, says that all of the above leaves the Colgate decision a hollow shell, giving manufacturers a theoretical right that they have no legal way to enforce. The dissent said the few activities carried on by P.D. did not go beyond unilateral action. He analyzed other cases which were not upheld by the Colgate decision and concluded these manufacturers were vastly more aggressive than P.D. has been in this case.

Pharmaceuticals Buys Thompson

Pharmaceuticals, Incorporated, (Geritol, Sominex, The J. B. Williams Company) has acquired Marvin R. Thompson, Incorporated, Stamford, Conn., makers of ethical pharmaceutical preparations. This marks the entry of Pharmaceuticals, Incorporated into the ethical drug field. The company was organized in 1945 by Dr. Thompson.

PHARMACEUTICAL MARKETING Basic Facts*

BY ROBERT A. HARDT PRESIDENT, ARMOUR PHARMACEUTICAL COMPANY

At a time when the air is filled with accusations, it seems appropriate to review some basic facts in pharmaceutical marketing. In doing so, I realize that I shall be covering some familiar ground for the sophisticates, and perhaps even for some of the newcomers and young people in the industry.

FACT 1

To flourish, any institution must have public favor. In order to have public favor, any institution must interpret itself vigorously and accurately to the public. We must constantly keep in mind that it is a fallacy to assume that what is familiar to us is familiar to others.

FACT 2

We are in an industry that is intensely competitive, with more than 1,000 companies—big, medium, and small—competing for the attention of 200,000 doctors and some 60,000 pharmacies. If there is a more competitive industry, I would like to know of it. In my opinion, the pharmaceutical industry is an excellent example of our competitive free enterprise system at work.

FACT 3

In the marketing of pharmaceuticals, as in other industries, all three phases of marketing are needed—repetition, continuity, and impact. In addition, because the products we market involve health, we must do considerable educational work to insure safety in use, and this, too, requires a repetitive program.

FACT 4

Physicians and pharmacists cannot all be reached through one medium; we must use journal advertising, mail, technical exhibits, and the spoken word. Even with all these media, time is required to reach *most*, and seldom do we reach *all* physicians and pharmacists.

FACT 5

Newspapers and magazines in the public domain promote the advertising space they have to sell by advertising in other newspapers and magazines, by mail, and through salesmen. Some of these are the very publications that question our right to advertise our products to physicians and pharmacists. Perhaps their feature writers are not always aware of this. It could be a case of mass communication media failing sometimes to communicate with their own people.

FACT 6

The detail man will always be important in our marketing picture because we are dependent on personal selling. There is still no force as strong as the persuasive power of the human voice in face-to-face communication.

FACT 7

Without going on the defensive, I should like to say that if we should come to a sudden halt in promoting pharmaceutical products, prices of these products would not decline, but would actually increase. (*Continued on page 415*)

*Presented at the western region annual conference of the Pharmaceutical Manufacturers Association, February 1960.

COURTESY GIVAUDAN-DELAWANNA INC.

FOR PERFUME SPECIALTIES

BY J. R. ELLIOTT PERFUME - FLAVOR CONSULTANT

In recent years, American management has been increasingly inclined to oppose the use of specialty bases in perfume compositions. This seems to originate from a strong desire to be completely independent in the purchase of fragrance materials.

Such a desire is understandable, since an increasing number of management personnel are technical men whose training teaches them to think in terms of fundamental raw materials. They are apt to look upon a perfume as merely a mixture of chemicals, rather than as an artistic production. Consequently, anything that disturbs this kind of thinking is instinctively resented by them. Specialty bases do exactly that, since they are primarily highly developed artistic bodies—a far cry from simple chemical mixtures.

A perfume is an artistic creation. Definitely, it is not the indifferent chemical mixture pictured by the chemist. It is "liquid showmanship," and it succeeds or fails according to the degree and intensity that this showmanship is built into it.

From the perfumer's viewpoint, the use of a specialty base is amply justified if it can add the subtle dramatic touch that will make his product sell. Its chemical composition is not significant to him, but its flair of showmanship most certainly is. The perfumer knows that people buy his fragrances for their artistry, not their chemical content.

Let us digress for a moment to consider what constitutes a true specialty base. Any perfumer worthy of the name has innumerable, simple rose, lilac, jasmin, and other compositions which he constantly uses as adjuvant bases in his day-to-day work. Most of these he has improvised along the way when they were necessary and the time was available for research. They are not spectacular but they are useful, like faithful workhorses.

However, the simple fact is that a single perfumer, no matter how great his skill and reputation, cannot physically encompass the entire field of bases. This is where the true specialty bases come into play.

A true specialty is not simply a hasty improvisation put on the market to catch a passing dollar. It is the outcome of the concerted artistic and scientific effort of a coordinated group of research perfumers and chemists. A good specialty base represents the expenditure of considerable time and effort—a major project.

The final result of such research is a brilliant, showy, novel fragrance effect, reflecting a versatility and artistry far beyond the capabilities of an individual perfumer. This kind of work is so superior that, although it can be imitated, it can never be copied. To make matters more complex, most specialty bases owe their novelty to "captive" chemicals known only to the maker, which renders their copying with any degree of accuracy a practical impossibility.

Outstanding showmanship in perfumery, as in

music, is not easy to attain. But when it is reached, the sales results speak for themselves. The purpose of the specialty base is to help build this showmanship. It functions like the conductor of an orchestra, by fusing the various fragrance "instruments" and invigorating the whole picture with its personality.

One of the arguments most frequently brought against the use of specialties is their cost. True, they are not cheap, because of their research cost, but the answer to this argument is simple: If they give the touch that makes the perfume sell, they are the cheapest investment for success that can be made. Their use by an individual perfumer represents only a fraction of the research cost spent by their maker to develop them. And, certainly, their cost in a successful fragrance is trivial compared to the advertising and sales expenses needed to put over a major fragrance promotion.

Rather than extol the virtues of specialty bases, let us simply look at their record of performance. Consider the French-made perfumes. The French perfumer is given a free hand in his creative work. He uses synthetic aromatics, essential oils, and specialties with one objective in view, to produce an impressive fragrance. He selects specialties for the particular and inimitable artistry they can confer on his product. Their chemistry has no interest whatsoever for him. He wants only fragrance results. And one need only look at the pre-eminence of many French perfumes for confirmation of his judgment as to the effectiveness of a specialty base in creating attractiveness.

Our perfume business is like a clock pendulum. It swings from one extreme to another. The antispecialty swing has nearly reached its end. What will make it swing in the other direction cannot be predicted at this moment. The stage for the return is being set by two factors. The first is the shift in the public's fragrance taste. The second is the recent appearance on the market of a considerable number of new aromatic chemicals, and the knowledge that many more are available for use, within certain firms, strictly as "captive" materials.

Several firms at this very moment are doing research on specialties for future consideration. When the time comes, these and a host of others will appear on the market. This time, however, I think that sales managements will attempt to price specialties for more use. At least, those people with whom I have talked are aware that a realistic price must be set if volume business is to be developed.

All of this points towards a renaissance of ideas in American perfumery, and the excellent prospect that an era of sound specialty bases will return.

Finally, I should like to make a few comments, and some constructive suggestions.

The average American perfume executive has come to be so charmed by the magic of advertising that he has almost lost sight of the fact that, once a fragrance is sold, it must have enough intrinsic artistic appeal to insure repeat sales.

Advertising unquestionably stimulates initial sales. But a fragrance must have some attractiveness within itself or the repeat sales just won't develop. It isn't hard to find fragrances that started out with a promotional "bang" but quickly faded into obscurity, simply because there was little in the bottle to back the advertising campaign promises.

The public's taste is rapidly improving, furthermore. People are becoming discerning and discriminatory; they want something for their money. Yet

(*Continued on page 429*)

COURTESY GIVAUDAN-DELAWANNA INC.

COURTESY COTY, INC.

FATTY ACIDS AND DERIVATIVES

BY GABRIEL BARNETT COTY, INC.

Cosmetic raw materials derived from animal and vegetable fats, oils, and waxes constitute an ever-increasing portion of modern cosmetic formulations. The great variety and novelty of present-day cosmetics has been made possible only because of the ready availability of these naturally occurring esters, and the ingenuity of the chemical industry in utilizing highly specialized techniques such as: fractional distillation, solvent crystallization, ozonolysis, hydrogenation, oxidation, ethoxylation, and molecular distillation.

Completely new approaches to cosmetic formulation have resulted from the abundant flow of fat-derived chemicals, which in turn have been used for further synthesis of newer raw materials.

Practically every cosmetic and toiletry product—cream, lotion, powder, lipstick, makeup, shampoo, dentifrice, hair dressing, creme rinse, cologne and deodorant sticks, shaving cream, antiperspirant, para hair dyes—has one or more components that were derived from a naturally occurring fat, oil, or wax. The almost complete dependence of most cosmetics on these raw materials becomes strikingly evident when one attempts to list those products not containing fat-derived products.

Fat-derived materials are equally varied in their properties and functions. They serve as emollients, thickeners, plasticizers, solvents, emulsifiers, wetting agents, dispersing agents, suspending agents, detergents, and solubilizers. Many surface-active agents have emollient properties and are most versatile in their wide range of hydrophilic-lipophilic characteristics. The relative occlusive or barrier effect of oil and wax films on the skin may be modified by the use of the various surface-active agents.

These naturally occurring fats and oils offer one of the largest potential sources of raw materials for the preparation of chemical synthetics. The cosmetic materials derived from fats and oils are given below according to their chemical types, together with important examples for each classification.

(1) Triglyceride esters—castor, sesame, peanut, safflower, soybean, coconut oils, and tallow

(2) Fatty acids—lauric, palmitic, myristic, stearic, oleic, linoleic, ricinoleic, hydroxystearic, arachidic, behenic, erucic, and arachidonic acids

(3) Fatty alcohols—lauryl, cetyl, stearyl, oleyl, ricinoleyl, linoleyl, lanolin, and tallow alcohols

(4) Soaps—sodium, potassium, ammonium, mono-, di-, and triethanolamine, mono-, di-, and triisopro-

*Presented at the Fatty Acids Symposium of the Association of the American Soap & Glycerine Producers, January 1960.

panolamine, and amino glycol salts of fatty acids

(5) Detergents
- (a) Alkyl sulfates from coconut oil fatty acids
- (b) Amide sulfonates
- (c) Ester sulfonates
- (d) N-acyl sarcosinates
- (e) Alkylolamides
- (f) Amines
- (g) Alkyl beta-amino propionates

(6) Cationic antiseptics
- (a) Quaternary ammonium compounds
- (b) Morpholinium compounds
- (c) Pyridinium compounds

(7) Alkyl fatty acid esters—isopropyl and butyl myristate, palmitate, stearate, oleate, and linoleate

(8) Polyhydric alcohol esters—propylene glycol, glyceryl, sorbitol, and sorbitan fatty acid esters

(9) Ethoxylated fatty acids—polyethylene glycol mono- and di-fatty acid esters

(10) Ethoxylated fatty alcohols—polyethylene glycol ethers of cetyl, stearyl, oleyl, and lanolin alcohols

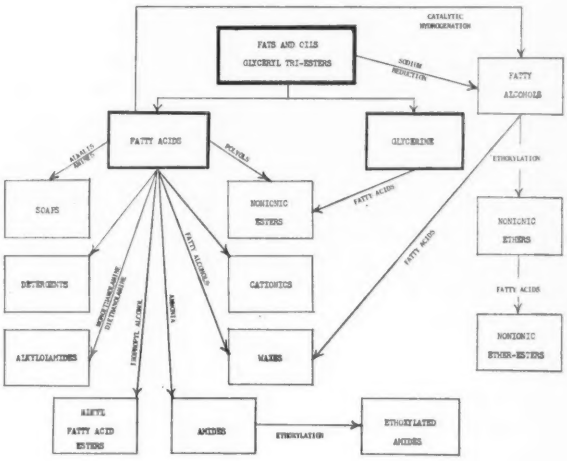
(11) Ethoxylated sorbitan esters—Tweens

(12) Branched-chain, high molecular weight alkyl esters—hexadecyl myristate

$$C_6H_{13}\text{-}CH(C_8H_{17})\text{-}CH_2\text{-}COO\ C_{13}\ H_{27}$$

(13) Lanolin-derived fatty acids and fatty alcohols [This wax ester yields normal fatty acids (even-numbered $C_{10} - C_{26}$), iso fatty acids (even-numbered $C_{10} - C_{28}$), anteiso fatty acids (odd-numbered $C_9 - C_{31}$), and hydroxy fatty acids (even-numbered $C_{12} - C_{18}$); and fatty alcohols (aliphatic, sterol, and "triterpenoid").]

(14) Lanolin derivatives—lanolin fatty acids to form amine soaps; lanolin fatty alcohol mono- and



IN COSMETIC FORMULATION*

poly-esters of ricinoleic and linoleic acids; acetate esters; ethoxylated ethers.

The availability of the many fatty acids listed previously, and the ever-increasing variety of chemical derivatives have given rise to serious problems regarding chemical and physical specifications. There are perhaps ten companies supplying fatty acids to the cosmetic industry and to specialty manufacturers of fatty acid derivatives. There are at least a dozen companies in the latter category, each with its own special manufacturing procedures, supplying fatty acid derivatives to the cosmetic industry. It is therefore not surprising that this state of affairs often results in a given product which differs significantly when compared to another source of the same material. As a result a direct substitution of one source for another is not possible and reformulation becomes necessary.

A discussion of the chemistry of glyceryl monostearate illustrates the differences one finds among the many suppliers. This extensively used emulsifier is generally made from triple-pressed stearic acid, consisting mostly of palmitic and stearic acids with small amounts of myristic and oleic acids. In addition to percentage differences of these four fatty acids from different sources, there is another variable in

(*Continued on page 393*)

COURTESY COTY, INC.

GLIDDEN AROMATICS

BY RALPH C. ZEHNER FIRMENICH INCORPORATED
AND JOSEPH P. BAIN GLIDDEN ORGANIC CHEMICAL DIVISION, THE GLIDDEN COMPANY

Long-range development by the Glidden research group at Jacksonville, Florida, has now been combined with exclusive distribution and collaboration with Firmenich, Inc., New York, to make available a group of pure aromatics from pinene. High and uniform quality, competitive and stabilized prices, and potentially unlimited supplies will have a marked effect upon the distribution picture for linalool, geraniol, citronellal, hydroxycitronellal, citronellol, citral, and ionones and their derivatives. Imports of lemongrass, citronella, and bois de rose oils will necessarily be affected by this new market factor.

The following production and sales figures in the thousands for 1958 are from Report No. 205 of the United States Tariff Commission, "Synthetic Organic Chemicals."

	Production pounds	Sales Quantity pounds	Sales Value dollars
Citral	61	63	174
Citronellal	250	—	—
Citronellol	290	210	457
Geraniol	310	194	400
Hydroxycitronellal	217	199	824
Ionones	332	299	744
Linalool	150	120	430
Linalyl acetate	128	106	380

(000 omitted)

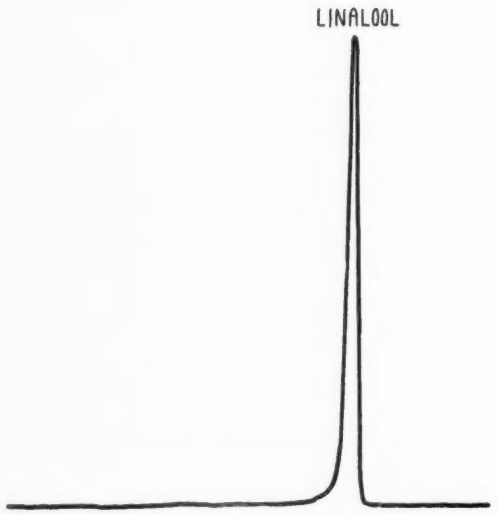
In addition, imports of essential oils directly involved are the following for the same year:

	Pounds	Dollars
Lemongrass oil	1,160	1,141
Citronella oil	3,635	2,130
Bois de rose oil	463	883

(000 omitted)

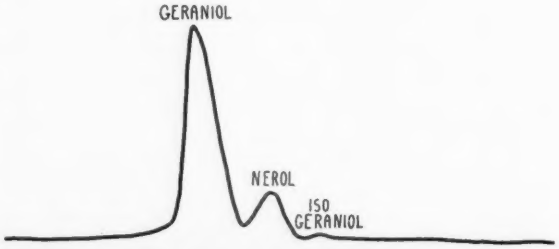
Prices of aromatic isolates and of imported oils have fluctuated widely in the past. New production, since it will not depend on uncontrollable weather factors, will exert a steadying influence on prices.

The basic raw material for the process is *beta*-pinene, obtained from turpentine. Recent statistics have shown production to be about 150,000 barrels of gum turpentine, 200,000 barrels of steam distilled wood turpentine, and 300,000 barrels of sulfate wood turpentine, for an annual total of 650,000 barrels or 32,500,000 gallons. Gum turpentine will typically contain 63 per cent of *alpha*-pinene and 33 per cent of *beta*-pinene; steam distilled wood turpentine will yield 75 per cent of *alpha*-pinene and only a trace of *beta*-pinene; sulfate wood turpentine will contain about 65 per cent of *alpha*-pinene and 20 per cent of *beta*-pinene. Pinenes are the well known source material for terpin hydrate, terpineols, and synthetic pine oil, as well as for isoborneol and camphor.

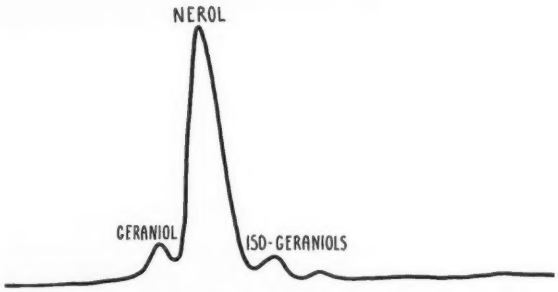


Gas chromatogram of Linalool "BG" showing absence of other compounds.

The two pinenes can be separated by fractional distillation; purified *beta*-pinene is then pyrolyzed to myrcene. Careful purification of this compound, and of each intermediate, leads to terpene aromatics free from the impurities usually present in compounds from natural sources. Hydration of myrcene yields thousands for 1958 are from Report No. 205 of the linalool, geraniol, with nerol. The latter can be hydrogenated to citronellol, which may then be dehydrogenated to citronellal, which may, in turn, be hydrated to hydroxycitronellal. Or, geraniol can be dehydrogenated to citral, which is then condensed with acetone to give *pseudo*-ionone, then cyclized to the ionones. The abundance and low cost of the starting ma-



Geraniol "LG" contains 80 per cent geraniol, 17 per cent nerol, and 3 per cent iso-geraniol in its gas chromatogram.



Nerol "BG" shows 80 per cent nerol, 15 per cent geraniol, and 5 per cent iso-geraniols in a typical gas chromatogram.

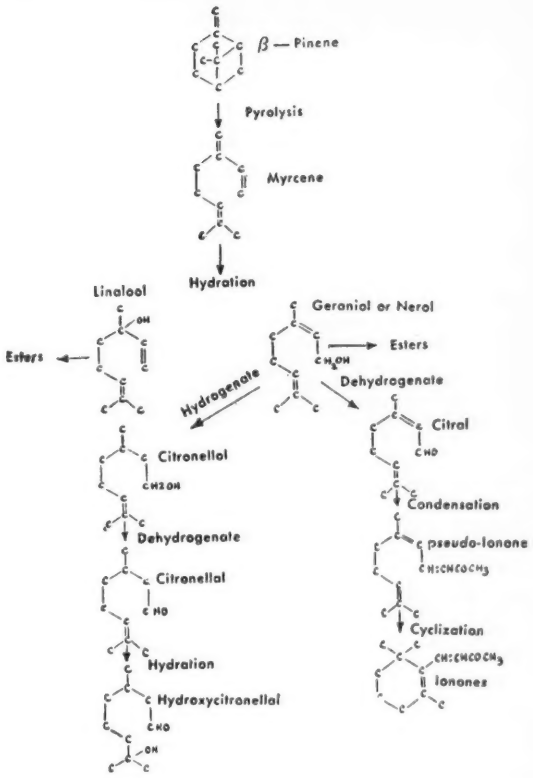
terial, *beta*-pinene, permit this sequence of reactions to be carried out without reference to the nominal market prices for the respective aromatics.

The salient characteristics of the process, however, are its ability to produce and reproduce uniform products. These may either be virtually chemically pure, or include related ten carbon atom terpene alcohols when desired.

For example, Linalool-BG is of highest purity; Linalool-PG has a woody note. These compare with linalool ex bois de rose, which may contain varying amounts of trace components from the natural oils such as the cineoles, camphor, linalyl esters, terpineol, sesquiterpenes, geraniol, nerol, and other esters and carbonyl compounds. The perfumer may thus choose from the synthetic grades the one that will duplicate or improve the linalool to which he has become accustomed, or add trace components for special effects. The final product, however, will be of unprecedented organoleptic uniformity.

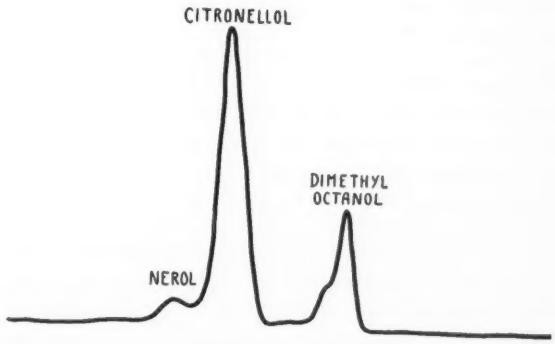
Commercial geraniols produced by the fractionation of citronella oil and chemical treatment ordinarily consist of mixtures of geraniol, citronellol, and nerol, along with some of the hydrocarbons, aldehydes, esters, and phenols present in the original oil. The composition will vary further as a result of the origin of the oil, the conditions of storage, and the processing methods. A typical oil may thus contain 50 to 75 per cent of geraniol, 20 to 40 per cent of citronellol, along with nerol and traces of citronellal, isopulegol, citral, citronellyl esters, eugenol, methyl eugenol, phenylethyl alcohol, sesquiterpenes, elemol, and other sesquiterpene alcohols. Glidden geraniols include those without citronella by-notes. Geraniol-MG, for example, consisting of geraniol, citronellol, nerol, and isogeraniol, when combined with 0.25 to 0.50 per cent of citral, 0.05 to 0.10 per cent of phenylethyl alcohol, and 0.25 to 0.50 per cent of eugenol, will have the floral character associated with good geraniol from citronella oil.

Commercial nerols of today usually contain only about 50 per cent of true nerol in combination with about the same amount of geraniol. Glidden can easily make this product for a price not much above that of citronellol. But more than that, the product will have a chromatographically guaranteed content



of over 80 per cent nerol, something never before possible, and at the same price. This makes the price of nerol far more attractive, and permits the use of the fine rose alcohol almost on a par with the traditional geraniol, citronellol, and dimethyl octanol team.

These new materials offer the perfumer a high order of odor-specificity for many applications, especially in newer detergent compositions. With simpler aromatics free from trace impurities, he can look to improved odor compatibility, control, and odor stability. A valued natural isolate is readily duplicated by combining a pure aromatic with a few known trace compounds for constant quality and availability.



Citronellol "BG" specifications call for 60 per cent citronellol, 27 per cent dimethyl octanol, 10 per cent nerol and geraniol, and 3 per cent isogeraniol. Only the first three ingredients are shown here as specific peaks in the gas chromatogram.

COURTESY AMERICAN CHOLESTEROL PRODUCTS, INC.

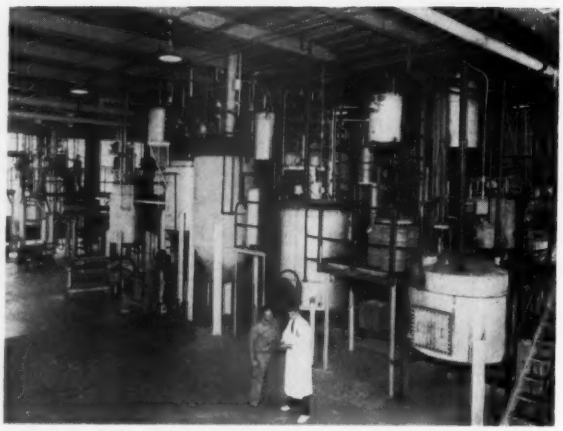
unsaturates, much progress has been made in improving the quality of these acids, and the trend of development is still in the direction of the stringent requirements of the cosmetic industry. Unsaturated acids, so long the bane of the cosmetic industry because of their inherent weakness to oxidation, although, potentially, they hold the answer to many cosmetic problems because of their physical properties, have gained new purity and stability. The reduction of polyunsaturates in oleic acid from 12 to 5 per cent has been accompanied by worthwhile improvements in color, odor, and resistance to oxidation. On the other hand, there is presently available a linoleic acid of 75 per cent purity which has exceptionally good odor and color characteristics.

NEW DEVELOPMENTS
In Fatty Acids and Ester Derivatives*

BY JOHN HARDIMAN KESSLER CHEMICAL COMPANY, INC.

The rapidly expanding use of fatty acids and their derivatives may be attributed in part to the important advances in fat technology in the last decade, which have assured us of an adequate supply of uniform, high-quality fatty acids at reasonably stable and attractive prices. The development of more precise methods of quality control for fatty acids and their derivatives assures the availability and reproducibility of the special properties now demanded by the industries that use them. Instrumental analysis as applied to the acids and to a lesser degree the esters has divulged a wealth of knowledge concerning their composition and has enabled the technologist to study and utilize to greater advantage their functional elements. These facts plus the noble efforts of those who strive towards adoption of a uniform and meaningful nomenclature have done a great deal in stimulating interest in the potential of fatty acid products and advancing their status in the chemical industry.

Although the cosmetic industry is not solely responsible for promoting the development of high-quality fatty acid products, it has been one of the most active. Advances in fatty acids have proceeded for the most part along the lines of improved quality in purity, better color, odor, and stability. The classical triple-pressed type composition is now available with iodine values of approximately 0.2 or less. Similar low values are now possible in the high-purity grades of stearic, palmitic, myristic, and lauric acids. While the problem of oxidation stability, odor, and color degradation of saturated acids in no way approaches the magnitude of that which exists with the



COURTESY AMERICAN CHOLESTEROL PRODUCTS, INC.

Two new additions to the available members of the fatty acid series are erucic and behenic acids, in purities of approximately 80 per cent. Erucic, the unsaturated C_{22} acid, and behenic, its saturated equivalent, melt at 28° and 70° C., respectively. On the basis of their properties it may well be expected that the soaps, esters, amine condensates, and other derivatives of these acids will provide new and unusual properties in the way of emollients, opacifiers, and surface active agents for the cosmetic industry.

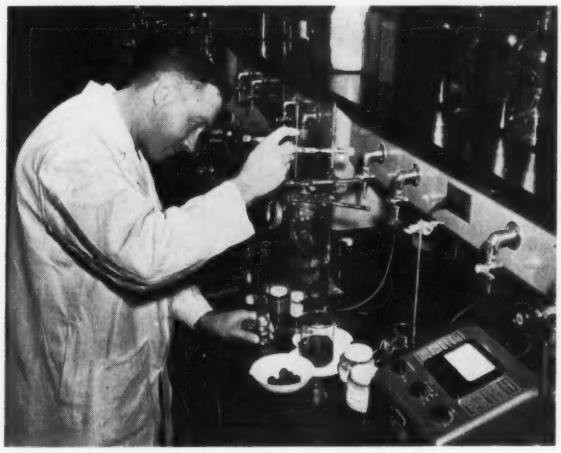
There is now available a saturated, liquid fatty acid which offers the solubility advantages of oleic acid and the stability associated with saturated acids. A skeletal rearrangement of unsaturated fatty acids having an 18C straight chain structure has produced a branched chain unsaturated fatty acid of the same

(*Continued on page 400*)

*Presented at the Fatty Acids Symposium of the Association of the American Soap & Glycerine Producers, January 1960.

PHARMACEUTICAL FLAVOROLOGY

BY H. L. JANOVSKY FRITZSCHE BROTHERS, INC



COURTESY LEDERLE LABORATORIES

CHEMICAL CHARACTERIZATION OF VOLATILE FLAVOR SUBSTANCES IN FOODS

- **Isolation**
  - Steam distillation
  - Solvent extraction
  - Gas entrainment
- **Concentration**
  - Counter-current distribution
  - Evaporation of solvent extracts
  - Adsorption
  - Distillation
- **Purification**
  - Chromatography (column and vapor phase)
  - Selective reaction with or without regeneration (derivative preparation)
  - Crystallization
  - Distillation
- **Identification**
  - Spectrophotometric analyses (IR, UV, visible, NMR, mass)
  - Chromatography (vapor phase)
  - Melting point determinations
  - Elemental analyses
  - Color reactions
  - Determination of various constants

Modern flavorists have changed the old-time medical axiom, "The worse the taste, the quicker the cure." There was a time when children feared the medicine more than the disease; today, it is necessary to urge caution lest children mistake the medication for candy because of its good taste.

The flavorist has worked closely with research pharmaceutical chemists in the development of many modern medications, whose sales success have been assured by enhancement of their palatability and aroma. Vile smelling or tasting modern vitamin preparations, antihistamines, tranquilizers, antibiotics, and the like, have been skillfully "flavor masked" for oral intake.

The last 15 years have witnessed a flavor renaissance period, during which flavor has been raised from an art to a branch of science. This basic change has been brought about by the introduction of new instrumentation and techniques that aid the flavorist in characterizing a flavoring substance, which formerly was dependent largely on experience and personal physical skills. The outline above is illustrative of a modern approach for defining a flavoring substance.

Only a short time ago it was not necessary for a flavor specialist to be a professionally trained chemist; today it is of primary importance, necessitating the new title of "flavorist" for this type of specialist. Perhaps in the very near future the study of flavor will be known as the science of flavorology. Although all phases of flavorology present physical and chemical problems for successful flavoring, the sphere of flavoring pharmaceuticals confronts the flavorist with many more chemical problems, requiring as it does tests for palatability, stability, chemical interaction, dosage, psychology, and some knowledge of the medicinal preparation itself.

Man's 9,000 taste buds react within 0.0015 to 0.0040 seconds to the sensations of bitter, sour, sweet and salty, which in turn are influenced by touch, heat, cold, odor, pain, pungency, individual threshold value, and color. From the few facts listed above, one can easily foresee that skill must be exercised to develop the required flavor sensation, as well as to mask the disturbing factors involved in the taste characteristics of the actual medicine.

Flavors are usually composed of synthetic aromatic organic chemicals, for example, acids, alcohols, aldehydes, esters, and ketones, blended with essential oils of spice, mint, and flower origins, botanical and animal extractives, and the like, all of complex natures. The pharmaceutical to be flavored is generally of intricate chemical origin, leading to many complications in the selection of proper flavor, assurance of stability, and nonreactive combinations for protection of the involved therapeutic values intended.

Imitation fruit flavors and combinations of the same are commonly employed in pharmaceutical flavoring. Some idea of the anatomy of various flavors may be derived from the list on page 393.

The simple addition of a flavor is not always possible in medicine, particularly if the medicine is bitter. The product in question may require adjustment for taste, such as the addition of an oral desensitizing agent like menthol or a synthetic sweetening agent,

(*Continued on page 393*)

WOOD CELLULOSE AND CORN STARCH IN TABLETS*

BY R. H. SHAH AND C. L. HUYCK †

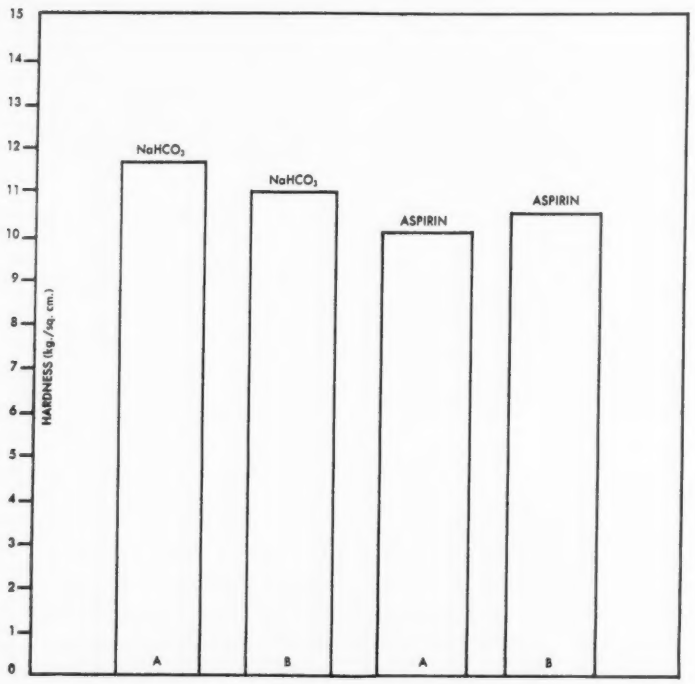


Figure 1. Average disintegration time in minutes of sodium bicarbonate tablets containing various disintegrants in simulated gastric juice U.S.P. and distilled water. A = corn starch; B = Solka Floc BW 40.

The literature of tablet disintegrants has been reviewed[1] as well as the relative merits[2] of each disintegrator. When a compressed tablet containing starch as disintegrator was examined under the microscope[3] with a few drops of cold water, the starch did not swell as expected, but disintegration was found to be due to capillary action, which increased with the porosity of the tablet.

The alginates[4] were found to be useful disintegrants for sodium chloride, sulfathiazole, and aluminum hydroxide tablets when Keltose (the Kelco Company's brand of calcium and ammonium alginate) was used as granulating agent.

The powdered acid form of carboxymethylcellulose[5] in 4 per cent concentration was found to be comparable to corn starch as a disintegrant for sulfathiazole tablets. An apparent advantage over starch is its buffering capacity and the fact that it can be granulated with other tablet components without losing its disintegrating properties. Also, the tablets were somewhat harder than those containing starch.

The addition of sodium dodecyl sulfate[6] to the granulation was reported to improve the disintegration of all tablets prepared by the wet granulation procedure.

Veegum (the R. T. Vanderbilt Company's brand of magnesium aluminum silicate) was found to have good disintegrating properties when 12.5 per cent of the 20 per cent total disintegrant was added to sulfathiazole before granulation and the remainder after granulation.

Disintegration time of tablets[7] containing cellulose BW 200 and corn starch as disintegrant were compared using lactose as the soluble agent and calcium gluconate as the insoluble agent. When 2.5 and 10 per cent were added before granulation, decreased disintegration time over starch at the 5 per cent level was observed in tablets containing soluble and insoluble medicinals with 5 per cent acacia solution

*Presented at the American Pharmaceutical Association's annual meeting, August 1959.

†Mr. Shah is in the Department of Pharmaceutical Chemistry, the University of Buffalo, Buffalo, N. Y., and Mr. Huyck is in the Department of Industrial Pharmacy, the St. Louis College of Pharmacy, St. Louis, Mo.

as the granulating agent.

Powdered natural sponge[8] was recommended as a disintegrator for tablets. When 5 per cent natural sponge was granulated with lactose, calcium gluconate, sulfadiazine, aluminum hydroxide, bismuth subnitrate, and sodium bicarbonate, using simple syrup as binder, the tablets disintegrated faster than when 10 per cent starch was used in the same manner. Almedia, the latter tablets containing wood cellulose BW 40 were tested in distilled water. Both were tested for disintegration time in simulated gastric juice U.S.P. XV.[10] As a control, 10 per cent powdered corn starch was used.

The wood cellulose BW 40 was Solka Floc BW 40 (the Brown Company's brand of wood cellulose). It was white (brightness #82), highly purified,

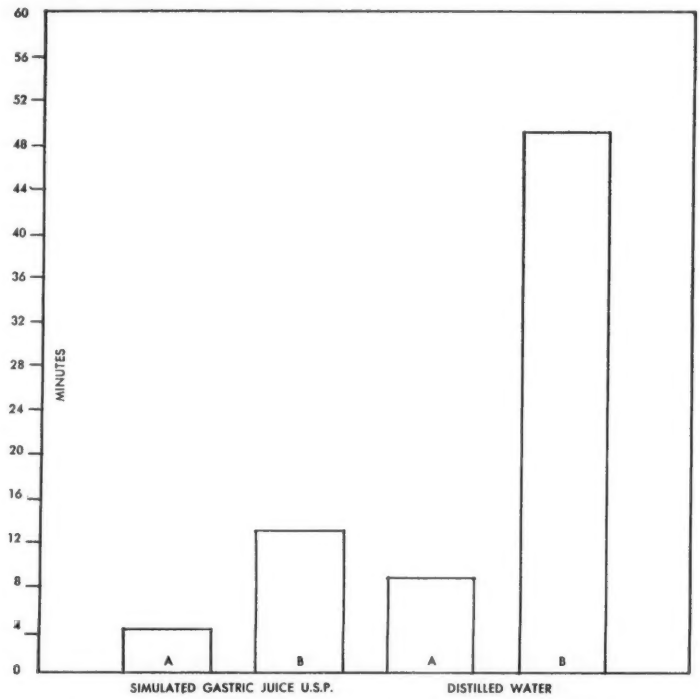


Figure 2. Mean breaking strength of $NaHCO_3$ and aspirin tablets containing various disintegrants. A = corn starch; B = Solka Floc BW 40.

so, the addition of 2 per cent dried starch to the granulation before compressing the tablets decreased disintegration time more in the tablets granulated with sponge than it did in the tablets granulated with starch.

British Patent No. 791,281 explains the advantage over starch of adding 8 mg. Amberlite XE 88 deionizing resin (the Rohm & Haas Company's brand of deinoizing resin) as a disintegrator for a phenobarbital tablet made from lactose, starch, and gelatin.

Experimental

Wood cellulose BW 200 was recently investigated[7] for its disintegrating properties in compressed tablets. It was decided to test wood cellulose BW 40 for its disintegrating property in tablets containing both soluble and insoluble medicaments. The soluble medicinal agent was sodium bicarbonate, while acetylsalicylic acid was selected as the insoluble medicinal. To determine the exact extent of disintegration due to the effervescence of sodium bicarbonate in acid

with an approximate average particle size of 80 microns, specific gravity 1.58, apparent density 14 lbs./cu.ft. and bulk of 4 ml./gm. It is an inert filler and is accepted by the U. S. Food and Drug Administration for tablet formulations. The fibrous purified cellulose dispersed in a tablet reduces capping by allowing better escape of air during compression. Its fiberlike action also improves binding. As a lubricant, purified cellulose functions as a nonabrasive scouring agent. It is particularly effective with heat-sensitive or sticky substances. The BW 40 wood cellulose used had the following fineness: approximately 65 per cent passes the No. 100 screen and approximately 40 per cent passes the No. 200 screen. Moisture content was approximately 5 per cent.

Formulation. The amount of disintegrant used was 10 per cent of wood cellulose Solka Floc BW 40. Although this amount is higher than recommended for

(*Continued on page 401*)

In recent years, a good deal of research in cosmetic product development has been concentrated in the area of exploring all the aspects of cosmetic technology in order to develop novel, effective, and superior products. In addition to investigating all the potentials of the conventional cosmetic systems, new systems have been sought with an eye toward doing an old job better or perhaps even introducing new over-all effects.

Since a cosmetic system is only as good as the raw materials (properly used), the cosmetic chemist finds himself always looking for new raw materials, or for unique ways of using old raw materials.

Glycerine and glycerine derivatives are good examples of old and new raw materials that have been fruitfully utilized in the development of cosmetics of yesterday and today.

DEVANEY PHOTO

GLYCERINE and Its Derivatives in Modern Cosmetics*

BY S. J. STRIANSE
DIRECTOR OF YARDLEY INTERNATIONAL RESEARCH

It is difficult to realize the full potential of glycerine and its derivatives in cosmetic formulation until one endeavors to enumerate the varied properties displayed by glycerine and its family. F. V. Wells[1] very aptly summarized this when he declared, "If water is the most widely employed and valuable of cosmetic ingredients, glycerine is certainly one of the most cosmetically useful of water miscible substances." I am in complete agreement with this statement. However, if I were to expand it somewhat, I might add that glycerine through its fatty derivatives is also responsible for some very valuable oil miscible cosmetic agents.

So that we may visualize the versatility of glycerine and its derivatives in cosmetic formulations, let us list some use categories in which they manifest good functional behavior: bodying agents, gelling agents, plasticizers, solvents and co-solvents, detergents, sunscreen agents, antibacterial and antifungal agents, and emollients.

Carrying this list a bit further, let us cite a few examples of how glycerine and glycerine derivatives manifest their functions in each of these categories.

Bodying Agents

In this category, we find glycerine adding significantly to the viscosity of many cosmetic systems. Simple solutions containing natural and synthetic gums are bodied considerably by the addition of glycerine. Cohen[2] points out that Carbopol 934 will thicken glycerine, and this is true, but it has been my experience that hydroalcoholic systems of Carbopol reach a maximum viscosity and mutual compatibility only when glycerine is included in the formula. Equal concentrations of other polyols do not manifest the same degree of bodying. Hand creams and lotions are also bodied appreciably by glycerine. Glycerine imparts a more stable and plastic body to hand creams than do other polyols.

Glyceryl monostearate adds considerable body to emulsions, be they fluid or solid. Actually, the viscosity increases directly with concentration. In fluid emulsions, the concentration is critical since too much may cause gellation. In general, the mono-, di- and triglycerides of saturated fatty acids increase the viscosity of emulsions and oil systems appreciably.

Gelling Agents

Glycerine of itself is not a gellant, but when reacted with starch or gelatin, it forms solid translucent gels.

The glyceryl monoesters of saturated fatty acids have been found by Babayan[3] to gel mineral or vegetable oils, viscosities of which vary directly with

*Presented at the Glycerine Symposium of the Association of the American Soap & Glycerine Producers, January 1960.

the increase in chain length of the fatty acid. The triglycerides, however, appeared to behave somewhat differently. The triglyceride of palmitic acid has greater gelling capacity than that of stearic acid, and the triglyceride of the latter, in turn, has greater gelling capacity than that of myristic acid.

The distilled monoglycerides, boasting a minimum monoester content of 90 per cent, have manifested the unique property of forming clear gels when mixed with water at or above the monoglyceride melting point. In addition, these gels dissolve in oil or can be dispersed further in water.

Brokaw and Lyman[5] claim the formation of a firm clear gel from a mixture of 10 to 90 per cent water and the remainder a partial glyceride containing less than 10 per cent of glycerides with saturated fatty acid radicals of more than 11 carbon atoms and at least 75 per cent of the monoglycerides of C_{16} or higher fatty acids.

Plasticizers

As a plasticizer, glycerine ranks high in cosmetic formulation. Film formers, such as natural and synthetic gums, are made more flexible by the addition of glycerine. This, of course, prevents flaking and stiff depositions. The more hydrophilic nature of glycerine makes it a somewhat better plasticizer for gums than propylene glycol. For example, methyl cellulose plasticized with 15 per cent glycerine (in one case) and with 15 per cent propylene glycol (in another case) shows a 38 per cent elongation of the film with glycerine and only 28 per cent elongation with propylene glycol.

Solid soap gels such as the deodorant or perfume sticks are made less brittle and provide better slip by the addition of glycerine.

Antiperspirant creams containing high percentages of electrolytes are well plasticized with glycerine, thereby preventing the crystallization of the electrolyte on the lip of the jar and on the surface of the cream.

COURTESY TUSSY

In stearic acid creams containing high percentages of free stearic acid, glycerine has been found to prevent the "rolling" phenomenon when the cream is rubbed on the skin.

The glyceryl esters of coconut fatty acids, hydroxy fatty acids, and unsaturated fatty acids have been used in lipstick formulations to plasticize the waxy film deposited on the lips.

Actually, one can go on discussing the virtues of glycerine and derivatives almost indefinitely in the area of plasticizers in cosmetics.

Solvents and Co-solvents

When considering glycerine as a solvent, I agree with Kalish's[6] statement, "As a solvent, glycerine shares the universality of water and ethyl alcohol." Berdick and McDonough[7], in discussing dental preparations, point out among other things that "glycerine has served as a solvent for various halides, alkalies and some of the sulfonomides and their sodium derivatives."

Glycerine has rarely been referred to as a co-solvent, but actually there are situations where the solubility of a material in a vehicle is increased by the presence of glycerine. For example, the soap in a lather shave cream is made more soluble in the aqueous phase because of the glycerine present. Other polyols are not as efficient in this regard.

Castor oil, one of the most extensively used fatty acid glycerides in lipsticks was, for many years, the solvent of choice for staining dyes such as tetrabromofloroescein. In the deep staining lipsticks of today, castor oil has been partially replaced by other solvents.

Detergents

Glycerine and its derivatives have played diversified roles in the detergent field.

Glycerine has been partially esterfied with coconut fatty acids to yield an intermediate product containing one or more hydroxyl groups susceptible to sulfation. This glycerine-containing detergent, a sulfated monoglyceride of coconut fatty acids, has been and is still used in a very successful commercial shampoo. The mildness and effectiveness of this detergent in shampoos, I feel, can be attributed to the glycerine portion of the molecule.

Glycerol monoesters of fatty acids and their acetulated counterparts[8] have been used in shampoos to improve the hair conditioning feature or to change the physical appearance of the product, such as producing opacity or increasing viscosity to produce a cream shampoo. In addition, these features are accomplished without undue loss of foam.

Glycerine itself has been added to detergent systems, such as shampoos, as a thickener,[9] and to im-

(*Continued on page 407*)

ACTIVATED ATTAPULGITES

BY MARTIN BARR, Ph.D. *

The pharmaceutical and cosmetic industries are continually searching for newer basic ingredients with advantageous properties for use in the development of better products. The activated attapulgites are such ingredients. In view of the interest shown in these substances by product devlopment workers, it is appropriate to review the properties of the activated attapulgites and their present and potential applications.

The name "attapulgite" was first applied by De Lapparent[1] in 1935 to a clay mineral constituent he encountered from Attapulgus, Georgia; Quincy, Florida; and Mormoiron, France. It is a hydrous magnesium aluminum silicate in the palygorskite group. The name "palygorskite" has been used as a specific term for individual minerals showing a considerable amount of substitution of aluminum for magnesium, but De Lapparent prefers using the term attapulgite for the actual minerals containing this substitution.

Bradley[2] has worked out the structure of attapulgite, reporting that it is probably monoclinic and that the ideal formula derived from that of the amphiboles can be written $(OH_2)_4\ (OH)_2\ Mg_5\ Si_8\ O_{20}\cdot 4H_2O$, there being two molecules to the unit cell. Partial replacement of Mg^{++} by Al^{+++} on a 3 for 2 basis is extensive, but such replacement probably can not be complete. The structure is composed of amphibole-like chains with each chain linked through oxygen at its corners to four neighboring chains. Interstitial chains of water molecules also parallel the c-axis and separate the amphibole chains. The structure of attapulgite is represented in Figure 1.

Attapulgite is an unusual sorptive substance, both highly adsorptive and absorptive, and this property may be further increased by specific thermal treatments. Such heat-treated clays are referred to as activated attapulgites.

Activated attapulgite is available in two grades, regular and colloidal (Pharmasorb Regular and Pharmasorb Colloidal, Minerals & Chemicals Corporation of America, Menlo Park, New Jersey). Activated attapulgite regular represents attapulgite thermally activated at elevated temperature to minimize colloidal properties while maintaining optimum sorptivity. Activated attapulgite colloidal is processed under conditions controlled to develop maximum colloidal properties.

Properties

The typical physical properties and chemical composition of the activated attapulgites are listed in Tables 1 and 2.

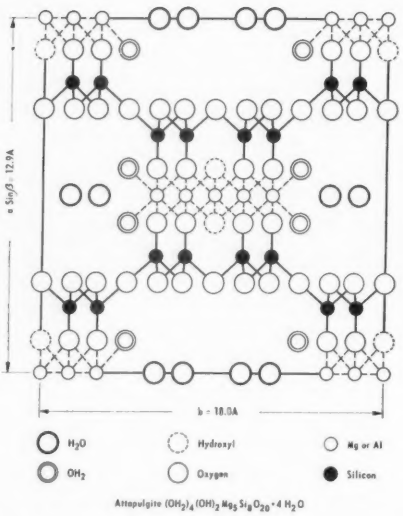


Figure 1. The structure of attapulgite, as taken from *Clay Minerology*, McGraw-Hill Series in Geology. McGraw Hill Book Company, Inc. 1953.

Sorptive Properties. The activated attapulgites have superior sorptive properties as compared with the naturally mined attapulgites. They have been shown to have excellent sorptive properties for methylene blue, various odors, moisture, alkaloids, diphtheria toxin, enterobacterial endotoxins, enteroviruses, and bacteria.[3-7, 26] The extent of both adsorption and absorption by activated attapulgites depends on various factors, among which may be included the chemical and physical nature of the sorbate, the medium in

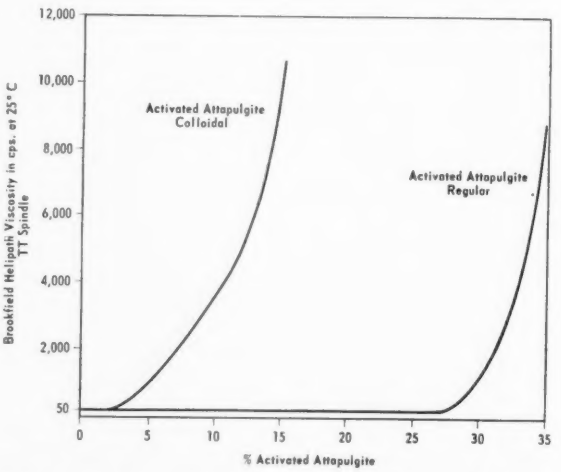


Figure 2. Effect of concentration on the viscosity of aqueous activated attapulgite suspensions.

*Professor of Physical Pharmacy and Pharmaceutical Research, Philadelphia College of Pharmacy and Science.

which the sorbate is dissolved or dispersed, the electrical charge on the sorbate, and the concentration of the sorptive material and temperature.

Neutralization of Acid. The activated attapulgites are capable of neutralizing acid over a wide *p*H range.

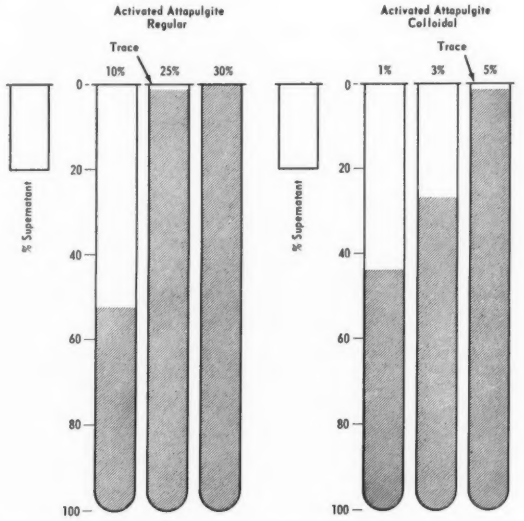


Figure 3. Effect of concentration on the sedimentation of aqueous activated attapulgite suspensions (seven days after preparation).

Activated attapulgite regular is slightly superior to the colloidal grade in this property. The mechanism by which the attapulgites neutralize acidity is believed to combine both adsorption and chemical reaction.

Preparation of Suspensions. The viscosity and sedimentation properties of aqueous suspensions of the activated attapulgites vary depending on their method of preparation. Such suspensions may be prepared by high-speed stirring from a previously prepared, dispersed concentrate, by presoaking, and by a combination of the latter two processes either at room temperature or at elevated temperatures. Different

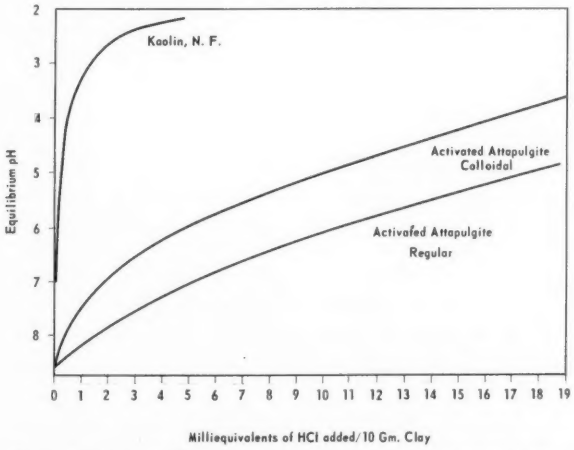


Figure 4. The neutralization of acid by aqueous suspensions of 10 per cent activated attapulgites and 10 per cent kaolin.

TABLE 1
Typical Physical Properties of Activated Attapulgites

	Regular	Colloidal
Average particle size (microns)	2.9	0.14
Ultimate particle shape	Needle-like	Needle-like
Solubility	Insoluble in water and dilute alkali. Partially soluble in acids which leach out a portion of the calcium and magnesium.	
Free moisture content (wt. % at 220° F.)	1.0	17
Ignition loss at 1800° F. (wt. %)	6.0	25
Bulking value		
Pounds per gallon	20.58	19.70
Gallons per pound	0.0486	0.507
*p*H	7.0—9.0	7.5—9.0
Color	Light cream	Light cream
Specific gravity	2.47	2.36
Residue on 325 mesh screen, max. (wet—wt. %)	0.01	0.10
Tamped bulk density (lbs./cu. ft.)	15—18	25—35
Surface Area (sq. m./gm.)	120—140	200—220
Heavy metals and arsenic—max. ppm.	20	20

TABLE 2
Chemical Composition of Activated Attapulgites*

	Percentage
SiO_2	67.0
Al_2O_3	12.5
MgO	11.0
Fe_2O_3	4.0
CaO	2.5
Other†	3.0
Total	100.0

*Volatile—free basis; oxides shown in analysis are not free but are combined as complex (magnesium aluminum) silicates.
†Includes heavy metals and arsenic, 20 ppm. (max.), typical 10 ppm.

methods of preparation should be used in order to produce optimum suspensions of the regular and colloidal grades of the activated attapulgites.

Optimum aqueous suspensions of the regular grade of activated attapulgite are prepared by dispersing the clay in a concentration of 30 per cent at 70° C. The desired concentration of the suspension may then be prepared by dilution of the predispersed concentrate.

When working with the colloidal grade of activated attapulgite, optimum aqueous suspensions are prepared by presoaking the clay in water at 25° C. for a period of 12 to 18 hours, followed by stirring of the mixture. Contrary to what may be thought, inferior suspensions result if the presoaking takes place in water heated to 70° C.

Viscosity and Sedimentation of Suspensions. Many factors influence the viscosity and sedimentation characteristics of aqueous suspensions of the activated attapulgites, among which may be included the concentration of clay, *p*H, and additives.

(1) The effect of concentration: Both grades of activated attapulgite exhibit non-Newtonian flow in aqueous suspensions (Figure 2).[7] Suspensions of activated attapulgite regular have very low viscosities up to a concentration of 25 per cent. Above this concentration, viscosity increases markedly. The viscosities of aqueous suspensions of activated attapulgite

(Continued on the following page)

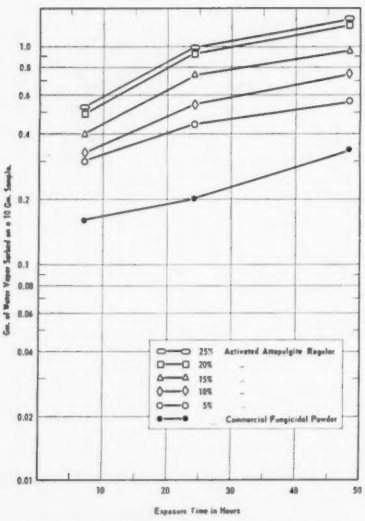


Figure 5. Water vapor sorption of a commercial fungicidal powder and combinations of the powder with activated attapulgite regular at 21.11° C. and 100 per cent relative humidity.

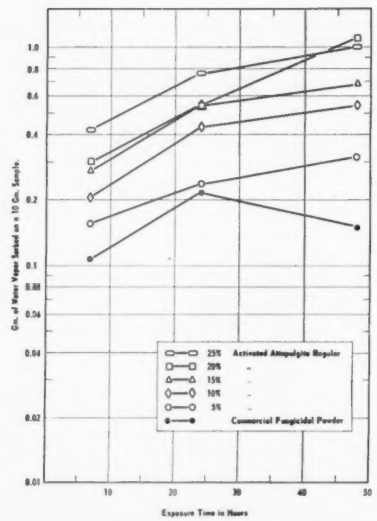


Figure 6. Water vapor sorption of a commercial fungicidal powder and combinations of the powder with activated attapulgite regular at 37° C. and 100 per cent relative humidity.

colloidal are many times greater than those of the regular grade. Suspensions of both grades of activated attapulgite exhibit thixotropy, although that demonstrated by the colloidal grade is of greater magnitude.

The influence of concentration on the sedimentation of aqueous suspensions of activated attapulgite regular and colloidal is illustrated in Figure 3.[7]

(2) The effect of *p*H: Aqueous suspensions of the activated attapulgites exhibit maximum viscosities at *p*H between 6 and 8.5. The nature of the substance used to adjust the *p*H of suspensions on the alkaline side of *p*H 8.6 influences the viscosity. Thus suspensions of the activated attapulgites are of high viscosity when adjusted to *p*H 11 with calcium hydroxide, whereas they are of low viscosity if sodium hydroxide is used.

(3) The effect of additives: Many pharmaceutical suspensions contain substances such as alcohol, propylene glycol, glycerin, sorbitol solution U.S.P. XVI, sucrose, dextrose, and sodium chloride for the purpose of imparting, among other things, viscosity, sweetness, humectant, and preservative properties. In most cases, the viscosities of the activated attapulgite suspensions are increased upon the incorporation of the additives in a concentration up to 30 per cent. Aqueous suspensions of both grades of activated attapulgite sediment less when they contain the additives mentioned above.

Taste. The activated attapulgites have a taste closely related to those of other silicate materials utilized in the preparation of pharmaceuticals. Formulations containing the activated attapulgites are acceptable to the taste. Such preparations may be flavored with the usual type of flavoring agents.

Odor. The activated attrapulgites are essentially odorless. Preparations containing the activated attapulgites can be satisfactorily perfumed. However, the highly sorptive nature of the attapulgites reduces the effectiveness of some perfuming agents, necessitating their use in somewhat greater concentrations.

Color. The activated attapulgites are light cream in color. The regular grade of activated attapulgite has a brownish tinge, whereas the colloidal grade is lighter in color.

Preparations containing the activated attapulgites have been satisfactorily colored with many dyes and pigments, such as F.D.C. Red No. 1 and 2, D.C. Red No. 33, F.D.C. Orange No. 1, and a combination of F.D.C. Yellow No. 5 and Green No. 6, and the ferric oxides.[8]

Preservation. Microorganisms are not capable of utilizing the activated attapulgites as nutrients for growth purposes. However, preparations containing the activated attapulgites and other ingredients will probably require the addition of a preservative system.

Toxicity. Toxicity studies on the activated attapulgites have revealed that they lack any degree of toxicity.[7] The clays are found as ingredients in products which are used internally and topically. No toxic effects have ever been reported in the literature from the use of these products.

Pharmaceutical Applications

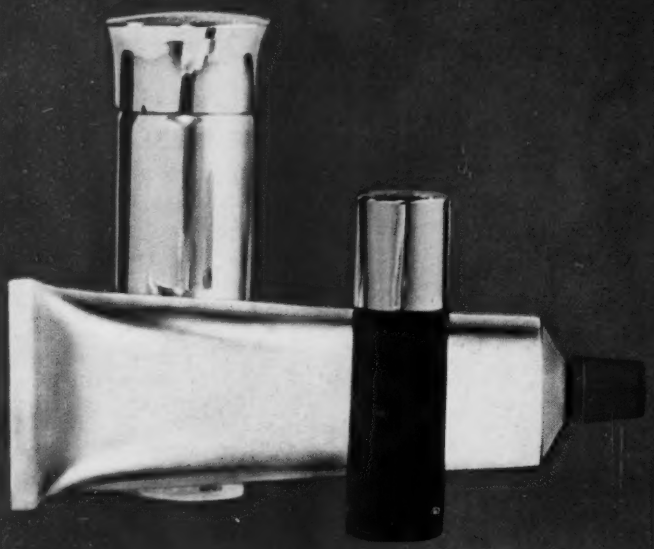
Intestinal Adsorbent Preparations. The major purpose of intestinal adsorbent preparations is to combat intestinal irritation. There are two mechanisms by which such preparations are believed to function: (1) by adsorbing toxins and bacteria, which are thought to be responsible for the onset of diarrhea, vomiting, nausea, and cramps in various types of intestinal infections; and (2) by coating the inflamed mucous membrane of the tract.[9-21]

In recent years, the activated attapulgites have found use in the formulation of intestinal adsorbent

(*Continued on page 410*)

Packaging and Selling

Bain D'Or, Lentheric's new bath line,
introduces bath oil for dry skin, moisturizing lotion for hands and body, and bubbling bath oil, all with a citrus fragrance, in tapering bottles with gold caps. The bottles have oval indentations front and back to prevent slipping, and are packaged in yellow cartons marbelized in gold and white, with a gold-on-white medallion logo.



Women love fine things and are loyal to products that appeal to them. Quality containers for your products pay double dividends both in customer satisfaction and increased sales.

Whether it is a collapsible metal tube or a one-piece aluminum Peerasol* container Peerless makes the highest quality container obtainable.

Both tubes and Peerasol containers can be handsomely decorated in two, three or four colors over a base coat.

The Peerasol containers offer precise valve-cup fit as a result of a patented manufacturing process. This means leak-proof containers, higher pressures and a high standard of quality control. Write or call for complete information.

PEERLESS TUBE COMPANY

Bloomfield, New Jersey

* Peerasol is a tradename of the Peerless Tube Company

FROM BLACK TO WHITE

The art of dewing naturally" is the catching phrase that will introduce Tussy's new packaging for its Moisture Cream and Moisture Lotion, this April. These are the first of Tussy's cosmetics to undergo the changes due for the entire line—changes that make for a close visual relation between the products and their national consumer advertising.

The company has exchanged its well-known black, opal glass jars, which have been in use for about 25 years, for white opal jars. Both the new jars and the new flint glass bottles have a modern but feminine silhouette that gives them a youthful, wholesome look, and makes them easily recognizable on the shelf and attractive on the dressing table. Moreover, the jars are constructed to stack well. The crown of the black jars has been eliminated because the company feels that the symbol is now so commonplace as to have lost its distinctiveness.

Labels for each product are the same color as the cartons for each, the moisture lotion being blue. The

Moisture Lotion and Moisture Cream in their former containers.

eye cream label is to be orange, and its catch-phrase is "The art of stepping on crow's-feet." This is also scheduled for introduction in April.

The cartons are designed to evoke an immediate visual association between the advertisements and the actual products on display in retail stores, not only by virtue of the color and the catch-phrase for each, but also by means of the Tussy girl, who is shown in the ads, on the cartons, and on the counter merchandiser—reproduced by a ten-color process. (The merchandiser for these first newly packaged products is 26 inches high and takes up only 17 by 5 inches of counter space.)

Tussy counter merchandiser displaying the first repackaged products.

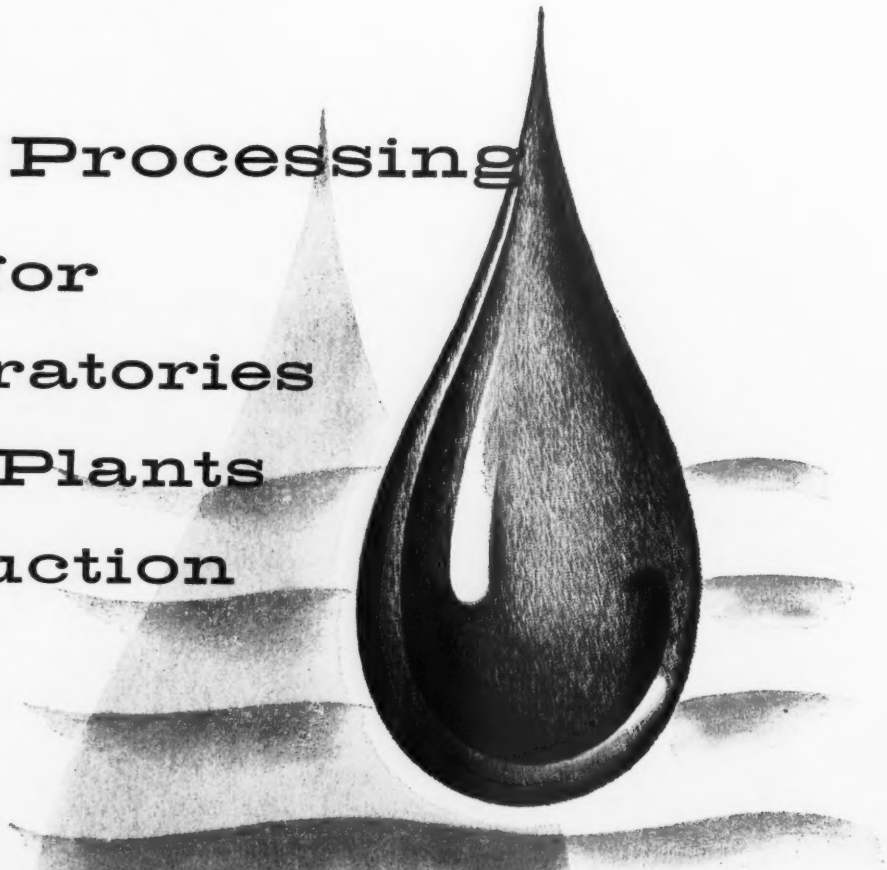
The redesigning program is expected to take some time yet to complete, according to Paul Carey, general manager of the Tussy division and vice-president of Lehn & Fink Products Corporation. The jars and bottles were conceived by Francis Blod, assisted by Richard Tupper, both of Design Associates, in cooperation with Seymour Kent, art director of Tussy, who is in charge of the program.

The bottles are manufactured by Carr-Lowrey, Baltimore; the jars by T. C. Wheaton, Millville, N. J.; the jar caps by Crown Cork & Seal, St. Louis, and the plastic caps for the bottles by Mack Moulding Company, Wayne, N. J.; labels are by Richard M. Krause, New York; and the cartons are by Container Corporation of America, Philadelphia. •

The new Moisture Cream and Moisture Lotion packages, and containers.

Water Processing for

- Laboratories
- Pilot Plants
- Production



● There are few basic problems which offer the confusion of choices presented by the broad needs of water treatment.

Whether in laboratory, pilot plant or production uses, purity and quantity requirements vary widely . . . while the nature of the raw water supply introduces still further variables in the selection of methods and equipment for efficient, economical water treatment.

Because proper water processing is so critical to many of the life sciences served by American Sterilizer, Amsco Research has long conducted a continuing two-part study of the subject. The first phase of the project has been concerned with establishing valid standards of quality for a broad range of water uses. The second, develops advanced methods and equipment which will produce ample quantities of water of required purity . . . at the lowest initial and operating costs to the user.

Experience indicates that an informed review of your water processing practices can be expected to reveal substantial opportunities for improvements and savings. We'll be happy to provide details . . . with no obligation.

AMERICAN STERILIZER
ERIE • PENNSYLVANIA

AMSCO Water Processing Systems include Stills from ½ to 500 gallons per hour; Deionizers to 1,000 gallons per hour.

● Write for Scientific and Industrial Division Bulletin IC601-R.

WORLD'S LARGEST DESIGNER AND MANUFACTURER OF STERILIZERS, SURGICAL TABLES, LIGHTS AND BIOLOGICAL EQUIPMENT FOR INDUSTRY AND RESEARCH

A CONTROLLED-FLOW APPLICATOR

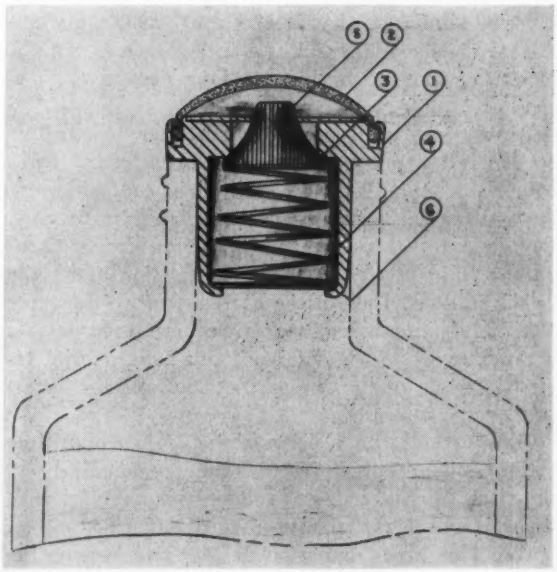
A new and improved, valve-type, controlled-flow applicator, developed by Dab-O-Matic Corporation, 15 West 44th St., New York 36, for use as a bottle fitment provides for a direct and measured application of liquid and even viscous materials, without messy running or leaking.

This particular applicator is suitable for dispensing deodorants, pre-shave preparations, perfumery, liquid toiletries, and lotions, as well as for external medications such as liniments, and pharmaceutical and industrial products.

Only slight pressure on the top of the applicator is needed to apply a product in the desired quantity, without dripping or waste. The large reservoir carries at least a half a dozen applications without inverting the bottle, as is necessary with the ball-type applicator. Moreover, with the rolling ball-type unit, only

one point on the ball surface is applied, resulting in a pattern of lines, with uncovered and unprotected spaces in between. The broad and flexible surface and gliding action across the skin of the Dab-O-Matic unit gives complete coverage, whatever the product.

Several patent applications for this applicator are now pending in the United States and abroad. It consists of a molded polyethylene plug (shown on the drawing as 1), which fits into the neck of the bottle; a pad (2) of a specially compounded, inert neoprene foam with a high absorption rate and unusual resiliency, which is locked into the plug by heat and pressure swedging; below the top pad, and molded in the plug, a diaphragm (3) with a variable-sized tapered hole in the center, through which the valve is inserted. The valve (4) consists of a treated, stainless steel music-wire spring with a cone-shaped tip (5).



This tip is coated with liquid neoprene which, when dried and fitted into the tapered hole, provides a positive air- and liquid-tight seal. The bottom of the plug is turned over to lock in the spring and valve (6).

By pressing the top pad, the valve is opened, the liquid fills the reservoir, and is dispensed by the pad. Because of the flexible valve and the high porosity of the pad, flow is immediate and application instant. Even heavy and viscous liquids, such as lotions and makeup bases, can be dispensed merely by using a large valve.

The quantity of liquid applied can be regulated and even measured by the size of the valve, its spring tension, the distance between the pad and the valve, and the thickness and density of the foam pad.

This particular neoprene foam was selected for its porous characteristics and because it is inert and sterile, as well as compatible with essential oils, alcohol, aluminum salts, fatty acids, and other product ingredients.

Color and decorative effects may be achieved by covering the foam pad with nylon fabric. Mohair, nylon fleece, felt, and other such materials can also be used for the pad. The cap, molded of urea plastic,

(*Continued on page 429*)

Packaging and Selling

The Food and Drug Administration has just been slapped down in a pretty complete way on a case of deceptive packaging.

For a while it looked as if we were about to enter a period similar to that of about 20 years ago when this government bureau cut a wide swath by knocking over what it considered to be deceptive packages.

It was not until a few years later, when this bureau lost a number of deceptive packaging cases before the court, that they retired in confusion and ignored the packaging field until this recent reentry. Consequently, this case, that of Delson Candy Company's "thin mints," is the first litigation under the "slack fill" provision of the FDA law since the early 1940's. It is interesting for many different reasons. As a preliminary to the details of this case, a brief review of some of the things that took place over 20 years ago is interesting.

As we recall, the decision of the FDA at that time to slap down on deceptive packaging, particularly on the slack fill package, was suddenly announced with the seizure of the then standard flavoring extract bottle. This was a panel bottle that had become the distinctive symbol of the flavoring extract, and a feature well-known to every consumer. It is true that the bottle looked a great deal larger than the contents as a direct result of the recessed panel.

Still, the flavoring extract people had used this bottle for years, and had promoted its chief feature, the panel, as an assurance of safety in handling because of the secure grip it gave a woman in the busy process of cooking, very often with wet hands. There was never the slightest indication in the trade that the consumer had any criticism of this bottle in regard to its contents, and there was plenty of evidence that women had been buying their flavoring extract in this bottle with perfect contentment over a long period of time.

The FDA managed to eliminate this particular panel bottle, but soon thereafter came a series of court defeats on deceptive packaging and a growing inclination on the part of the court to refuse to take the FDA's opinion as to what constituted a deceptive package.

As a matter of fact, a great many factors enter into deceptive packaging, and the purpose of a manufacturer may not be to deceive but rather to accomplish something very important in marketing.

For instance, it might be said that some packages in the grocery supermarket are deceptive because of their exaggerated size, although they are so designed specifically to prevent pilfering. It might also be said that meeting some shipping requirements, or preventing breakage, or giving security in handling in the home, or providing for mechanical filling, labeling, or wrapping, would tend to produce a package that is ultimately deceptive to the consumer.

The whole truth is that in modern packaging a multiplicity of problems must be solved if we are to take full advantage of all the wonderful new materials now becoming available and of all the new equipment that makes mass packaging and mass distribution possible.

For instance, quite a few years ago, the plastic molders made a real effort to enter the plastic cream jar market in competition with the truly enormous market then held almost exclusively by the opal jar. In addition to the beauty which plastics could bring to a cream jar, the plastic makers thought plastics also offered a substantial advantage in shipping weight.

However, as they got into manufacturing, they found that a four-ounce plastic jar was only about half the size of a four-ounce glass opal jar. As a matter of fact, the plastic jar in any of its sizes looked pretty puny beside the opal jar. Certainly one of these was deceptive in its appearance. Either the opal jar was deceptive in its over-all large size, or the plastic jar was deceptive in its emphasis on small size.

In order to obtain an outside physical appearance of equal size for the same weight, the plastic people brought out a number of experimental jars. It was soon discovered that in order to equal the size of the opal jar, too much plastic material was used, making the cost too high. One of the leading plastic manufacturers came out with a two-shell plastic jar, that is, an inner compartment suspended within the outer shell jar. This had a brief run, but was then discontinued for a variety of reasons, perhaps one being that at just about this time the FDA had begun to view with a jaundiced eye any package that magnified its size.

The candy package that revived all this controversy is long, with two false ends with hollow dividers, and is covered with foil so that the consumer cannot count the candies. Although the weight is clearly specified, the FDA claimed that the package clearly indicated that it should hold from 10 to 11 more mints than it would if the false ends were not used.

In preparing this case for trial, the FDA lawyers thought they had a completely new formula that would overcome the reason for their defeats 20 years ago, when the judge bluntly threw out the case

stating that it was merely the suspicion and opinion of the government bureau unsupported by any real facts that a package was deceptive.

In this case, FDA lawyers hired a psychological service to make an investigation through interviews and to test consumer reaction to the deceptiveness of the package.

During the trial, four consumers were found to testify that they had been misled. The government also presented a buyer from a leading wholesaler, and the spokesman for two competing manufacturers who testified as to deception.

Another important witness was a packaging consultant who tried to blow up the claim that a big box was necessary to prevent breakage or spoilage. This packaging expert came up with experimental information showing that this particular big package provided less protection than smaller packages used for smaller competing products. All in all it looked as if the government had at last found a formula for jumping on so-called deceptive packaging, and a factual way of presenting the case that would be very impressive in the courts.

However, in the decision, the federal district judge stated that the testimony by FDA witnesses produced no proof that "adults of normal intelligence would be induced" by the exterior appearance of the package to buy in the expectation of getting any particular number of mints. The FDA case had stressed the "cushioning" and "head space" in this candy package, and had pointed out that the foil wrapping made it impossible for the consumer actually to count the contents. The defense, in turn, stated that the package had been specifically designed to protect just such a product as fresh candy.

In throwing out the case, the judge further stated that the evidence was "overwhelmingly persuasive" that the exigencies of machine filling, handling and shipping of separate pieces of candy interstate commerce requires that less than the total volume of the box interior in which they are contained be occupied by candy.

Furthermore, in regard to the FDA's claim and so-called factual evidence that consumers might be misled because they could not count and see the candy because of the foil wrap, the judge stated that the net weight was plainly printed on the package. He said that there was no evidence that the retail price was "disproportionate to net weight or inappropriate to the quality of the contents."

This case appears to be a definite setback to the FDA's campaign to judge a package deceptive without consideration of a number of other contributing circumstances. It seems to us that, had the FDA won this case, and had the package been accepted as deceptive or slack fill without regard to the normal intelligence of the consumer in plainly observing the contents noted on the label, and without regard to a wide variety of other circumstances influencing the design of the package, such a decision would have worked unnecessary hardship on the entire field of packaging and marketing.

Some food stores are getting so big that customers frequently get a feeling of frustration in trying to locate the articles they want.

This is being solved by a push button in a California self-service drug store.

All the shopper need do is check a directory and push a button; a recorded voice tells where the product is in the store.

Amid a flood of headlines and publicity, Revlon has again made changes among their advertising agencies, this time to a substantial concentration with one agency. We have no comment, beyond repeating the words of Chester J. LeRoche, board chairman of an agency which has been billing Relvon in excess of $2 million at the time of resigning its Revlon account.

"We have taken the step primarily because there is a basic difference between client and agency in the method of 'pursuing excellence.' We believe the best result is realized when there is an ageed-upon plan to achieve specific needs through a specified series of actions. Revlon, on the other hand, finds that best results are achieved when action is determined by reaction to situations and competitive moves. Certainly there is merit in both philosophies, and many advertisers and agencies are partisans of each."

A new magazine *Mothers-To-Be* will hit the newsstands in February to reach a potential market of 4,000,000 expectant mothers.

A subscription seems to us like an easy solution for wedding presents.

Probably the widest price variation in the entire drug trade is in vitamins. We recently saw in a leading suburban department store a counter display of 15 bottles, each containing 100 tablets of multi-vitamins and minerals and each with a different company name, lined up for price comparison. These vitamin products were almost identical, according to an examination of their label, and yet, from the lowest price, which was the store's own private label, to the highest price, under the label of a renowned ethical pharmaceutical manufacturer, there was a 150 per cent price differential.

The fact that this enormous volume product of the industry is now an over-the-counter product is already beginning to have important reactions in the industry, which may be the beginning of a major change in marketing practice.

In an action that may well prove a signpost in a new direction for industry marketing, E. R. Squibb & Sons has taken the plunge into proprietary marketing by setting up a new marketing unit, Squibb Laboratories, to promote proprietary products.

These flint glass bottles are from our C-39 line . . . one of our most versatile and attractive styles. Available in either clear glass or frosted and can be supplied plain or with your own fired-on ceramic label. Made in 14 sizes from 1/2 dram to 16 ounce capacity.

CARR-LOWREY GLASS CO.

Designers and manufacturers of fine glass containers

Factory and Main Office: BALTIMORE 3, MD. • New York Office: 415 MADISON AVE. • Chicago Office: 1572 MERCHANDISE MART

Squibb is now a leading seller of vitamins in prescription marketing and has now decided to enter the contest for the over-the-counter market. A number of test markets have been tried for Vigran capsules, and the company is now moving into the major metropolitan markets. Other products from this division are expected to appear soon in over-the-counter sales.

In its consumer advertising, Squibb has adopted a form of scare copy which, we think, may invite criticism. The headline reads, "Beware of vitamin deficiency in the bottle." The copy continues, "because of cheapened manufacturing processes, lack of proper control, faculty storage and other causes," the inexpensive vitamins consumers are buying and using might have lost 20 to 90 per cent of their potency.

The second largest producer of vitamins in ethical marketing is the Upjohn Co. This company has placed some small and certainly modest advertising in *Good Housekeeping*. Parke, Davis Co. is said to have experimented with public advertising of vitamins in Canada.

It is true that to date the ethical companies have either avoided public advertising or over-the-counter sales of their vitamin products. It is also true that any excursion into the non-prescription field and any substantial success here by a leading ethical house will have a deep effect on the thinking of many of the large ethical companies, who are already in a state of indecision over this huge market.

Here's an interesting suggestion from the magazine *Purchasing Week*.

"If you are casting about for a way to aid the sales department of your own firm, you'll be interested in this suggestion from a purchasing agent: 'Get your sales manager to put you on his next sales meeting program. Have a salesman try to sell you on your own company's products. It'll be the hit of the sales meeting.' "

People in advertising are at last thoroughly disturbed about the growing public reaction to advertising in general. The American Association of Advertising Agencies has just sent out 5,000 folders to its members telling how each one as an individual can help reduce objectionable advertising in television, radio, and print.

Here are the steps an individual advertising agency may take to counter offensive advertising. Any agency can send a complaint to the association when it notices objectionable advertising.

Without identification, the complaint will then be forwarded to a committee on improvement in advertising. The criticism will then be sent on to the offending agency with a report of the committee vote.

The offending agency is given the responsibility of taking corrective action, including calling the criticism to the attention of the advertiser concerned. If the offending agency does not answer the complaint, or answers unsatisfactorily, the matter will be referred to the Association's board of directors.

Just recently Earl W. Kintner, head of the Federal Trade Commission, said, "The Federal Trade Commission will be as tough as is necessary to encourage the advertising industry to clean its own house."

Maybe this will all help. We are waiting to witness the first complaint by the American Association of Advertising Agencies against a member officially registered with the Federal Trade Commission. When that happens, maybe we will get some action.

According to a report from a prominent English cosmetic company, men's toiletries are starting to boom in England, a fact which still startles and puzzles the conservative English people. This report states that sales have been growing at the rate of over 50 per cent a year, and should exceed 15,000,000 pounds this year. We assume he is talking about money, not weight.

The salesman plays a major part in the acceptance of point-of-sale material by the retailer. This is interesting news but it is even more interesting to read that salesmen are getting recognition as an important factor in moving merchandise.

We have been through a period in which the combination of self-service retailing with heavy consumer advertising has tended to minimize the importance of the salesmen in the minds of many retailers and manufacturers.

One of the big point-of-sale display producers called in a marketing research organization to learn some of the facts of life about their own business. This was one of the chief conclusions in the survey: "The manner in which point-of-sale material is presented to the supermarket operator and his attitude toward a relationship with the manufacturer's representative who is presenting it to him are strong factors in determining whether the material is accepted by the retailer."

We would say that this is a definite conclusion, and one that runs contrary to the mood now prevailing among too many manufacturers.

"The Changing Role of Variety Stores as a Vendor of Prestige Cosmetics," is the title of an address given by Joseph Reiss before the Cosmetic Career Women at a recent luncheon.

According to Mr. Reiss, a real revolution is going on in variety stores. His term for what is emerging is the variety department store.

These are the stores that are increasing personal service, charge accounts, delivery, parking facilities, telephone selling, and all of the doo-dads of modern retail marketing.

The following quote from his speech provides seri-

ous food for thought to manufacturers who have avoided the variety store for various reasons in their pattern of distribution.

"In Laconia, New Hampshire, or in White River Junction, Vermont, the Variety Department Store may be the only representative outlet for your merchandise in the trading area. In Pittsfield, Mass., you have an old-time Department Store that's asleep on the job and the nearby Variety Department Store is your best bet to service your line.

"This is the first—the golden rule of setting up distribution for your line in Variety Department Store land."

The literature on packaging is filled with articles outlining the requirements of a package. Some of these requirements run up to 20 or more variations.

The vice-president of General Mills, however, recently reduced the basic requirements of a good package to three cardinal principles: (1) protection of the product, (2) efficient movement through distribution channels, and (3) convenience to the consumer.

Here is certainly news! One of the biggest ethical drug companies is beginning to think of the cosmetic department for increased sales, not by acquiring a cosmetic division, but as an extension for the sale of its own products.

Using the theme "Beauty Is More Than Skin Deep," the Upjohn Co. has a new program for getting the pharmacist to display their Unicap M vitamin-mineral preparation in the cosmetic department. In the special promotion is a kit for pharmacists which includes "a detailer" for sales training, a giveaway brochure for customers, and a cosmetic counter display unit.

This handsome cosmetic counter display piece, which has been especially designed for the cosmetic customer's attention, has space for showing bottles of Unicap M, and a slot from which the customer may take a leaflet entitled, "Important Facts About Beauty For You." Written from the feminine point of view, the leaflet points out the importance of good nutrition and of vitamins and minerals in maintaining top personal appearance.

The third piece in the promotion packet is a detail folder relating the various vitamins and minerals to their "cosmetic" counterparts. This provides a valuable selling aid for the clerk and cosmetician.

Here are examples:

The skin—lack of vitamin C can cause a sallow complexion. The texture of the skin is related to vitamin A. Flaky skin can result from shortages of several of the vitamins.

Lips—rough lips and the unsightly little cracks at the edge of the mouth can result from shortages of riboflavin.

Dental health—healthy gums and teeth are a must for an attractive smile. The health of gums and teeth is related to vitamins C and D, and to the mineral calcium.

The detail piece provides the pharmacist with the answer for women who may ask: "Aren't vitamins fattening?" One Unicap M tablet, for example, contains the daily requirement of nine essential vitamins and ten important minerals, yet is equivalent to only one calorie.

One thing that Senator Kefauver's hearings are bringing out is that the ethical drug industry has grown to be one of the major advertisers, even though you rarely see their advertising in a consumer magazine.

According to an article in *Advertising Age*, Medical Promotion Records, an industry measuring service, reports that this branch of the industry spent $85,000,000 in 1959, split 50-50 between journals and direct mail. However, many in the industry consider this too conservative and are more inclined to lean toward the estimate of Advertising Age—$125,000,000 for expenditures in this year.

A new booklet, "Here's What the Experts Say About Television," has just been issued by the Television Bureau of Advertising. Included are quotes from company officials covering a wide variety of industries and range of topics such as comparisons with other media, corporate image and concept advertisers, cost efficiency, demonstration qualities, effect on brokers, retails and so forth.

By a remarkable coincidence, all of the remarks of all of these executives are highly favorable to television advertising.

Plastic bottles are apparently headed for a substantially larger and wider market. Part of the enthusiastic expansion going on in this container undoubtedly results from the exciting volume developing in detergents.

Actually, the plastic bottle is not only finding new uses in new industrial fields, but is also being used increasingly in the market that has always been its primary pivot, that is, for drug and cosmetic packaging.

We understand that Owens-Illinois is entering a period of new capital investment for its plastic bottle division, and we hear that Continental Can Company plans to establish both East and West Coast manufacturing facilities, and a plant at another location in the Midwest.

Glass container consumption continues to show gains. Medicinal and health supply packers received shipments of 2.6 billion units during 1959, compared with 2.5 billion in 1958, an increase of 5.3 per cent. Toiletries and cosmetic bottle shipments reached 1.5 billion in 1959 as compared with 1.4 billion in 1958, an increase of 7.6 per cent.

NEWS and VIEWS

BY TED KLEIN PUBLIC RELATIONS DIRECTOR*

A Fragrant Polyethylene Package

The Fragrance Process Company, Inc., has made possible fragrant polyethylene packaging film and molded items. The smell of clean linen for laundry packages; the fragrance of pine, cedar, lavender, and spruce for packaging men's sport clothing; the aroma of chocolate and spearmint, as well as many other flavors—orange, lemon, raspberry, potato, and even onion, all these are either now available or will soon be so, pending F. D. A. approval.

Scented polyethylene, which was created by Alfred Newald, president of Fragrance Process, is sold in the form of a resin concentrate to which different scents are added. The concentrate is called Poly-Scent. It is dry-blended in the hopper with Petrothene, film grade resin manufactured by U. S. Industrial Chemicals Company. Fragrance Process claims to be able to scent resins of any density or melt index that is required by the extruder, and that the aroma becomes an integral part of the film and cannot be washed away.

The scented polyethylene film is now being made by Texas Plastics Inc. of Elsa, Texas.

National Packaging Exposition

The American Management Association's 29th National Packaging Exposition and the accompanying National Packaging Conference will be held at Atlantic City's newly enlarged Convention Hall, the Exposition from April 4 through 7, the Conference from April 4 through 6. The exposition will consist of the latest in packaging machinery and equipment, materials and supplies, containers, and services, in displays by some 335 firms, and all conference sessions will be held during the morning hours to allow registrants to attend the exposition.

A registration fee of $2.00 is to be charged for the exposition; and registration tickets to fill out in advance can be obtained from Clapp & Poliak, Inc., 341 Madison Avenue, New York, N. Y., or from exhibitors.

Packaging conference sessions are open to nonmembers as well as to members. Members will pay a fee of $25 for the entire conference or $10 for each individual session. Nonmembers will be charged $35 for the entire conference, or $15 per session. Registration blanks may be obtained from the Packaging Division, American Management Association, 1515 Broadway, New York 36, N. Y. Conference registrants may attend the exposition without paying show registration fees; exposition fees do not cover conference sessions.

Folding Carton Shipments Decline

Shipments of folding cartons in January reached the lowest level in 3½ years, according to the Folding Paper Box Association of America. The decline was felt by all plants in all sections except the South, which registered a 2 per cent increase in volume. The eastern area declined 10 per cent from shipments a year ago.

The new package for Christian Dior's de luxe Eau de Toilette is a grey box accented in white and gold with a color on the ribbed panel to identify and distinguish each fragrance; Miss Dior, gold and white; Diorama, grey and white, Diorissimo, pink and white.

Treatment Trio, combination package by Bonne Bell including 1006, Medi-Masque, and Medicated Make-up, plus a record by Bonne Bell describing why and how to use each product.

Glass Containers Reach All-Time High

Domestic shipments of new glass containers by the members of the Glass Container Manufacturer's Institute totaled 19.7 billion units in 1959, an increase of 6 per cent over those of 1958.

National Drug Company's plastic vial (below) which replaces the wooden container (above) for fragile capillary tubes of smallpox vaccine. Designed by the firm's Grayson Moore, they are manufactured by Precision Plastics.

Procter & Gamble's new deodorant, Secret, which is now being distributed nationally. It is available in three sizes in the cream form. In the roll-on form it comes in an economy size for $1.00, and a large size for 75 cents.

E. R. Squibb's new, improved Crysticillin Unimatic in a completely disposable syringe with an all-glass barrel that requires no mechanical attachments or cartridges, and is ready for use without sterilization, in 600 or 300 A.S.

The magic touch of aerosol packaging

Practically every time you enter a drug store nowadays, more and more aerosol packaged drug and cosmetic products appear on the shelves and counters. Not just new products. But well known, established brands as well. And with good reason! For these products are "better" in aerosol form. They're easier to use and more acceptable. They generate more sales and yield a higher margin of profit.

The booming aerosol drug market

For the second year in a row, pharmaceuticals were the fastest growing of all aerosol groups—showing a sales increase of 50% in 1958 over 1957, compared to a 20% increase for all aerosols. And the market is still growing fast for a host of aerosol pharmaceuticals, such as external analgesics, spray-on bandages, athlete's foot medication and nasal sprays. It is expected that aerosol drug sales will reach $200 million by 1961!

Tremendous growth of aerosol cosmetics

Aerosol packaging has a magic touch in helping to sell products for women. Hair sprays are the largest selling single aerosol product group—115 million units in 1958*. Aerosol colognes and perfumes have proved phenomenal sellers—shooting up from 5.4 million units as recently as 1955 to 28 million units in 1958*. Aerosol hand lotions and creams are showing a similar increase, as are aerosol personal deodorants.

✔ How to "enter" the profitable aerosol field

If *your* product can be sprayed, brushed on, daubed, poured or dusted—you, too, may be able to share in the spectacular success of aerosol packaged products. Here's how General Chemical, one of America's leading producers of aerosol propellants, can help you enter the profitable aerosol field:

Market information—Helpful facts and figures on the aerosol market for many types of drug and

yields bigger sales . . . higher profits!

cosmetic products are available to present and potential aerosol marketers.

Expert technical service—General Chemical has one of the most complete aerosol development laboratories in the country. We will be glad to help you develop the right propellant and formulation compatible with your product, its container and its uses.

New product ideas—The results of continuing research into new and improved aerosols—including information about promising new aerosol formulations developed in our "Genetron" aerosol propellant laboratories—are available in "Genetron" aerosol propellant Product Information Bulletins covering many types of aerosol products. Write for a complete list of "Genetron" aerosol propellant Bulletins presently available.

Contract fillers—We will also be glad to put you in touch with highly capable contract fillers in all parts of the country who will put up your product in aerosol form for test marketing and handle full scale commercial production as well. *You don't have to invest a cent in plant, special equipment or personnel when you work with these contract fillers!*

Why not take advantage of these valuable services from General Chemical *now?* Call or write us today for a confidential discussion of your requirements.

*Estimated by Market Surveys Department,
General Chemical Division, Allied Chemical Corporation

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Putting the "push" in America's finest aerosols

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GENERAL CHEMICAL DIVISION
40 Rector Street, New York 6, N.Y.

Patent thoughts and trends

BY THOMAS CIFELLI, JR., PATENT ATTORNEY*

Double Standard in Patents

Many years ago when this department was young, it was pointed out that a real double standard exists in patents. By this is meant the tendency of some people to consider the other fellow's patents as invalid, while their own patents, of course, are based on a real invention.

We are not referring to the situations in which there is room for real differences of opinion as to whether an invention is patentable or not. Rather, we are referring to the all too many instances of people forming opinions even before the facts are considered, or before the facts are fully developed.

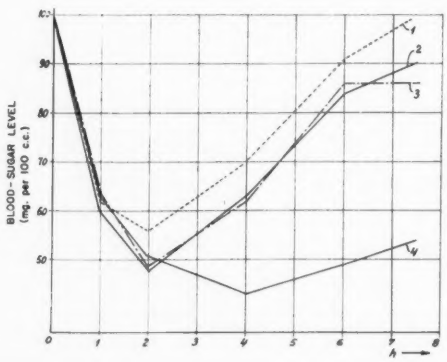
Perhaps one of the main factors leading to the double standard is the extreme pressure under which we labor in this age. We want answers right on the spot, or, as the saying goes, "yesterday." Consequently, when information is needed as to whether a certain device, product, or process comes under the claims of a certain patent, many people appear impatient—not to say unbelieving, when they are advised that, before any opinion can be given, a copy of the entire proceedings leading up to the issuance of the patent and all the pertinent prior art patents should first be studied. Although it is never so stated, nevertheless, people seem to feel that the patent attorney is making a mountain out of a mole hill, doubtless for his own benefit.

Let us consider two current examples, which may demonstrate the wisdom of not making hasty decisions. One involves a recent patent issued on a particular form of insulin crystal. The other involves a ruling by the U. S. Supreme Court backed up by an award for three million dollars damages in favor of the patent owner.

Insulin Patent. This patent, U. S. 2,920,014, was issued to two Danish inventors primarily on an insulin crystal having the shape of sharp-edged rhombohedron founded by plain crystal faces, the obtuse angle of each rhombus being between 114° and 115°.

Certainly, insulin having been known for a good many years, one might wonder what happened to the Patent Office to make it grant patent protection on insulin of a certain size and shape. To wonder is perfectly reasonable. However, it would be dangerous to *conclude* from these mere facts that there was no basis for the issuance of a patent. This many people seemingly do.

If one were to take the trouble to examine the facts, it will be seen that evidence showing the unexpected beneficial results obtained with the new form of insulin was presented. This evidence was the graph (below) showing blood-sugar curves for fasting rabbits that had been given an injection of different insulin crystal suspensions, as well as ordinary insulin.



"The blood sugar curves shown in Figure 2 are average curves from a series of experiments in which fasting rabbits have been given a subcutaneous injection of the same insulin dose (2 units) of different insulin preparations.

"Curve 1 is obtained by injecting a solution of crystalline insulin in hydrochloric acid, said solution having a *p*H-value of about 3, a zinc content in the form of zinc chloride of 2.7 mgs. per 100 millilitres and a glucose content of 5 per cent.

"Curve 2 is obtained by injecting a suspension of star-shaped ox insulin crystals known per se in an aqueous medium without a content of added sodium chloride but with the employment of sodium acetate buffer and a *p*H-value of 5.5. The total zinc content of the suspension is 1.3 mgs. per 100 millilitres. The crystals employed are produced from an aqueous crystallization medium containing 0.5 per cent of insulin, 40 mgs. of zinc (as chloride) per 100 millilitres,, 0.05 M sodium citrate and 15 per cent of acetone. The crystallization is effected at *p*H 6.2 and the produced crystals are separated from the crystallization medium, washed and dried. They show a zinc content of 0.34 per cent.

"Curve 3 is obtained by injecting an insulin crystal suspension which is produced as follows:

"There is produced a sterile mixture containing 1.7 per cent of insulin from ox pancreas, 0.013 per cent of zinc in the form of zinc chloride, 0.1 M sodium acetate and 0.7 per cent of sodium chloride together with so much sterile hydrochloric acid that the *p*H-value of the mixture will be 5.5. The insulin will crystallize from the mixture in the shape of stars, twins and like deformed rhombohedral bodies and will contain about 0.4 per cent of zinc.

"One part of the insulin crystal suspension thus produced is diluted with 9 parts of sterile water containing 0.11 per cent of methyl-p-oxybenzoate and the *p*H-value is adjusted to 5.5.

*Richards and Cifelli, Newark 2, New Jersey.

"It will be seen from Figure 2 that there is no noticeable difference in the effect between the solution of crystalline insulin and the two insulin crystal suspensions of curves 2 and 3.

"Curve 4 is obtained by injecting an insulin crystal suspension which has been produced in the same manner as described in connection with curve 3, except that sodium chloride is present in a concentration of 7 per cent during crystallization. As a consequence thereof the insulin will crystallize in the form of sharp-edged rhombohedra with plane crystal faces and contain 0.7 per cent Zn when isolated from the crystallization medium and dried.

"The effect of this insulin crystal suspension is distinctly protracted, the blood-sugar values at about 8 hours after the injection having only about half the magnitude of the value before the injection."

It is believed that, if one were to accept the evidence at face value, the average reasonable person could only conclude that something unexpected results from the special form of the insulin crystal developed by the inventors.

Award Against Patent Infringer. Perhaps the best way to present the situation to the reader is to place the reader in the position of the person who is asked to give an opinion regarding patent infringement. Assume that someone calls you and apologizes for taking your time on a very simple matter: the question whether the use of manganese silicate is covered by a patent. A typical claim of this kind reads as follows:

"A finely-divided unbonded fusible composition for use in electric welding employing a bare metal electrode as a source of weld metal, said composition being substantially free from substances capable of evolving a detrimental quantity of gas under welding conditions and containing calcium fluoride and a major proportion of one or more alkaline earth metal silicates."

Since even a high school chemistry student knows that manganese is not an alkaline earth metal, the reader's first reaction will certainly be that the question is an easy one and that, of course, there is no infringement—that's all there is to it. At this point the reader may well be pardoned for a passing tinge of regret that he did not become a patent attorney because such questions show how much easier it would be than his own way of earning a living.

Unfortunately, the easy and obvious answer proved to be 100 per cent wrong, and the company that thought it was in the clear, the Lincoln Electric Company, has a judgment totaling $3,000,000 against it because of its mistake.

In all probability, the thought uppermost in the reader's mind at this point, since courts do not know anything about technical matters, is that it is not surprising that an incorrect decision was rendered in this case. However, if the reader will take a few minutes to consider the facts, maybe he will agree with the Court's decision.

At the outset, too many people overlook the fact that the patent claim is not infringed merely by making a literal following of all its terms, that is, by making what is often referred to as a "Chinese-copy." As the U. S. Supreme Court itself said:

"One who seeks to pirate an invention, like one who seeks to pirate a copyrighted book or play, may be expected to introduce minor variations to conceal and shelter the piracy. Outright and forthright duplication is a dull and very rare type of infringement. To prohibit no other would place the inventor at the mercy of verbalism and would be subordinating substance to form. It would deprive him of the benefit of his invention and would foster concealment rather than disclosure of inventions, which is one of the primary purposes of the patent system."

As a result, the courts evolved what has become known as the Doctrine of Equivalents. The essence of the doctrine is that one may not practice a fraud on the patent. Briefly, if anything does substantially the same thing in substantially the same manner as does the claimed element, the courts hold it to be an equivalent.

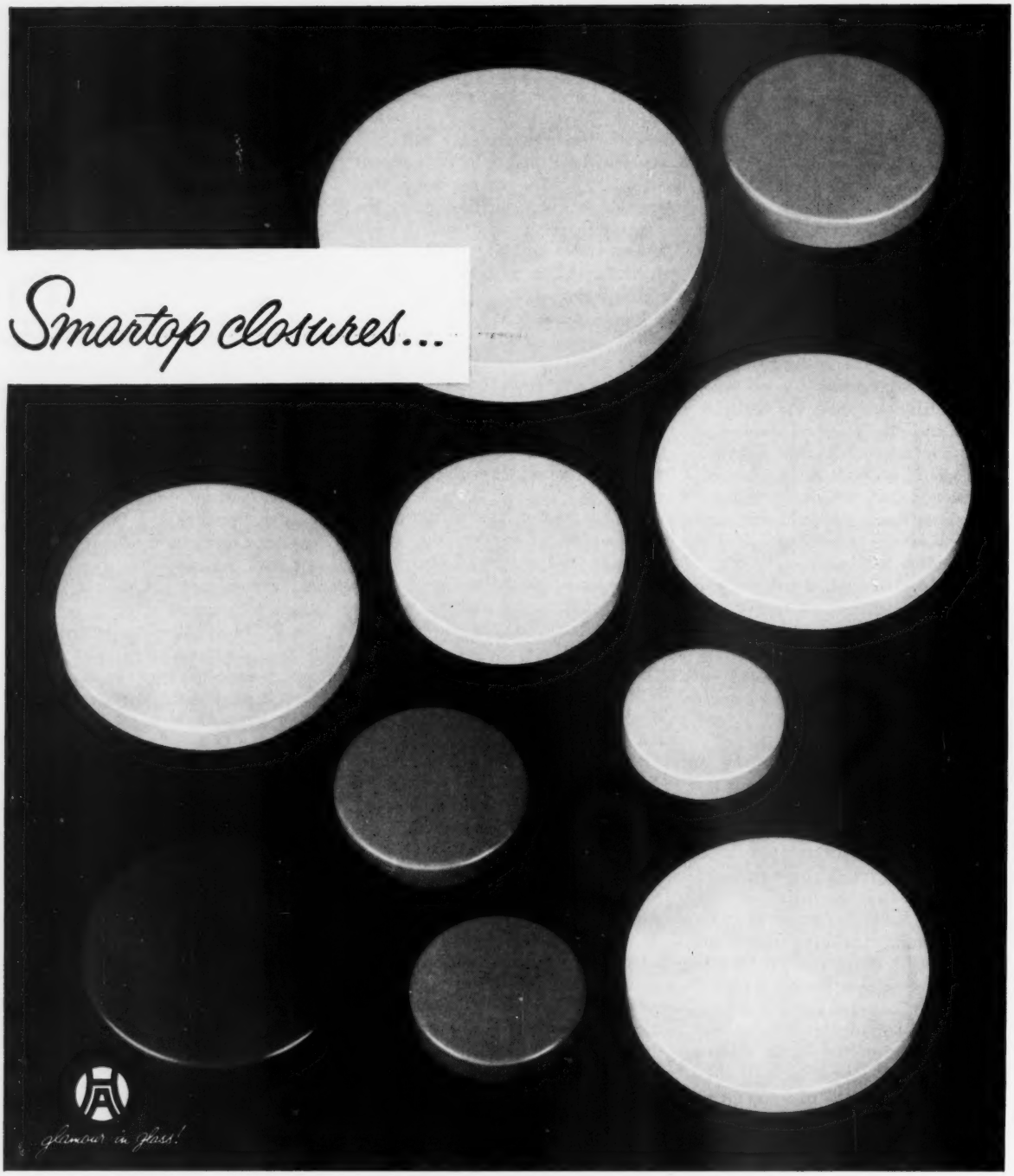
It will be seen, therefore, that the real question of whether manganese silicate is an alkaline earth metal silicate is whether the use of manganese silicate in the electrical welding art was considered as substantially the same thing as the use of alkaline earth metal silicates. There is no hard and fast rule for determining what an equivalent is. It must be determined against the context of the patent, the prior art, and the particular circumstances of the case. Consideration must be given to the purpose for which the alkaline earth metal silicate was used in the patent, the qualities it has when combined with the other ingredients, and the function it is intended to perform. Also the courts consider whether persons reasonably skilled in the art would have known of the interchangability of manganese silicate with the alkaline earth metal silicates.

Accordingly, the court, instead of jumping to a conclusion, looked into the situation presented to it. If found, in its own words:

"Without attempting to be all-inclusive, we note the following evidence in the record: Chemists familiar with the two fluxes testified that manganese and magnesium were similar in many of their reactions (R. 287,669). There is testimony by a metallurgist that alkaline earth metals are often found in manganese ores in their natural state and that they serve the same purpose in the fluxes (R. 831-832); and a chemist testified that 'in the sense of the patent' manganese could be included as an alkaline earth metal (R. 297). Much of this testimony was corroborated by reference to recognized texts on inorganic chemistry (R. 332). Particularly important, in addition, were the disclosures of the prior art, also contained in the record. The Miller patent, No. 1,754,566, *which preceded the patent in* suit, taught the use of *manganese silicate in welding* fluxes (R. 969,-971). Manganese was similarily disclosed in the Armore patent, No. 1,467,825, which also described a welding composition (R. 1346). And the record contains no evidence of any kind to show that Lincolnweld was *developed* as the result of *independent research* or *experiments*."

Now that the reader has been apprised that specialists familiar with the problems of welding compositions understood that manganese was equivalent to and could be substituted for magnesium in the composition of the patented flux, and that their observations were confirmed

(*Continued on page 416*)



No matter what you need
the elegance you need, at lower cost!

They cost much less than you've ever thought possible—elegant new Smartop closures in beautiful solid colors, or lithographed designs, any liner, and sizes from 33MM-to-89MM. They offer *peak* line performance and product protection. And look how easy to use, ⅛ turn off, ⅛ turn on! Call H-A for Smartop today!

HAZEL-ATLAS GLASS division of **Continental Can Company**
Wheeling, West Virginia

NEWS and VIEWS

BY TEDI KLEIN PUBLIC RELATIONS DIRECTOR*

The General Speaks

Competition in the chemical industry has increased markedly, according to General John E. Hull (U.S.A., Retired), President of the Manufacturing Chemists Association. In a talk presented at a recent meeting of the Drug, Chemical and Allied Trades Association, he told the audience of how this competition has brought down the cost of certain chemicals used by the pharmaceutical industry.

His talk provided several important items which bear repeating. On the subject of price stability and price decreases, he said, "Despite the cry of some well-meaning persons who would attempt to say that more and more specific markets are being controlled by fewer and fewer firms, the opposite is actually the case for chemicals. Just to name a few which have occurred in the past decade: ammonia producers have increased from 12 to 40; urea producers from 2 to 10; caustic soda producers from 31 to 37; and this holds true for many other products."

He also spoke on foreign expansion of U. S. chemical firms. "An MCA survey during the year showed that about 50 per cent of our 180 members were engaged in, or directly interested in, foreign operations. It is estimated that 15 per cent of the 1959 capital outlay by U. S. chemical firms will be, or has been, for plants and facilities abroad."

Do We Still Need a Pharmaceutical Industry?

Or do our people prefer a second-rate industry for second-rate patients? According to William B. Graham, president of Baxter Laboratories and chairman of the board of the Pharmaceutical Manufacturers Association, "The answer must be that it is not in our American way, and never has been, to settle for second-best of anything."

At the same DCAT luncheon at which General Hull had previously spoken, Mr. Graham gave a straightforward presentation of his views of what Senator Kefauver was doing. "The furnishing of bales of papers, documents and records demanded by the committee has been disruptive of efficiency and has required thousands of man-hours diverted from production. . . ."

Looking forward to what might happen as a result of the Senator's committee, Mr. Graham said, "But if unduly restrictive legislation should by any chance come out of these hearings, the public will be sadly disserved. Let us not forget that the pharmaceutical industry deals with the stuff of life and death. So does the Kefauver committee—although one might think from the headlines that is main concern is the *price* of life or death. . . . Unduly restrictive laws which kill the profit incentive and throw road blocks into the creative pathways of the pharmaceutical industry could have tragic consequences. . . ."

Here is the sincere view of an expert in developing and marketing pharmaceuticals as to what may be a consequence of the hearings, which are to continue until August of this year. The $425,000 budget of Senator Kefauver's committee is, according to Dr. Austin Smith in a recent issue of his PMA Newsletter, "the biggest of any Senate committee or subcommittee." It will undoubtedly provide spectator sport for many and action for a few companies, in the months to come.

Sign of The Times?

Many important announcements are buried in the back columns of daily newspapers because a city editor feels that a love tryst or a football score deserves more attention.

Such an item recently appeared in the *Newark Evening News* (daily circulation 275,000). Under the single-column headline, "Drug Price Spread Cited," with a date line of Elizabeth, N. J., the paper printed a five-paragraph story that could affect substantially the pharmaceutical industry.

It began, "Echoes of the U. S. Senatorial inquiry into drug prices were heard in the Union County Court House yesterday with the disclosure that bids received for tranquilizer pills carried a 2,000 per cent spread."

The pills in question were ordered by a local New Jersey hospital. But Freeholder E. J. Carlin reported that the 6,000 tablet order had bids running from $213.00 to $9.90. Naturally, the county patronizes the lowest-priced supplier.

Carlin said that he has "ordered the purchasing department to compile a complete list of all drugs and medical supplies purchased for the hospital during 1959.

"Hereafter, specifications in bidding will no longer designate the trade name and manufacturer," Carlin said. And added, "Where equal substitutes can be made, specifications for advertising purposes will be amended to include the substitutes."

A Word to the Wise

Earl Kintner, Chairman of the Federal Trade Commission, told me recently that the FTC would very likely become increasingly interested in pharmaceutical advertising directed at the physician.

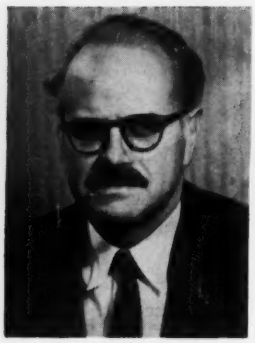
The two cases now under consideration, according to Mr. Kintner, have marked a beginning in the agency's activity in enforcing certain laws.

A quick poll of a few friends in the world of pharmaceutical advertising shows that all medical copywriters have always been concerned about accuracy. There is no great pressure being put on by clients that the agencies pay particular attention to getting all the facts down with heavy emphasis on what is medical. The net result of Mr. Kintner's concern with advertising to the physician could be a reluctance by some smaller firms to accept free lance copy. Instead, these firms may decide that the time is ripe to hire pharmaceutical ad specialists rather than take a chance of running afoul of the FTC.

Chemist Writes on PR

In his publication, *Monthly Bulletin*, Dr. Irwin Di Cyan manages to cover subjects near and far as they might apply to the drug and cosmetic industry. Last month he went into the field which is this writer's bailiwick and accredited himself as an informed ally. So, as this month's suggested outside reading on public relations, I refer you to his excellent article.

*Paul Klemtner & Company, Inc.



From left to right: Raymond F. Sullivan, chairman of the board of directors, Noxzema Chemical Company; Dr. Gustav J. Martin, research director of William H. Rorer, Inc.; Ralph Falk, II, senior vice-president,

Baxter Laboratories, Inc.; Dr. Ernest M. Weber, executive director of research and development for Chas. Pfizer & Co., Inc., in which post he will assist the vice-president in over-all direction of that program.

NEWS . . .

Appointments and Promotions

Raymond F. Sullivan has been elected chairman of the board of directors of the **Noxzema Chemical Company,** succeeding the late Dr. George A. Bunting, founder of the firm. Mr. Sullivan, chairman of Sullivan, Stauffer, Colwell & Bayles, Inc., New York advertising agency, is also a director at large and member of the operations committee of the American Association of Advertising Agencies. He has served as a director of Noxzema since 1936, and his agency handles some of Noxzema's advertising.

William H. Rorer, Inc., has appointed Dr. Gustav J. Martin research director. Dr. Martin resigned recently as vice-president and director of research of the National Drug Company. He is the author of several books and many papers in the field. Under his direction, the research of the firm is to be expanded.

Ralph Falk, II, has been elected senior vice-president of **Baxter Laboratories, Inc.** He will continue as president of the subsidiary, Baxter Laboratories of Canada, Ltd.

Newly appointed executive director of research and development at **Chas. Pfizer & Co., Inc.,** is Dr. Ernest M. Weber, who will continue to serve, as he has since 1953, as director of biochemical research and development. He began with Pfizer as a research biochemist in 1942. The company has also appointed Charles T. Haffey director of purchases, succeeding Frank J. D'Antonio, who has retired after 42 years of service to the company. Mr. Haffey, who began as an assistant plant buyer in 1947, has served as assistant director of purchases since 1959.

Russell A. Ayres, Jr., has been named sales coordinator of **The Risdon Manufacturing Company,** and John K. Quinn named assistant sales manager of the firm's **Cosmetic** and **Aerosol Divisions.** Mr. Ayers has been with Risdon since 1940. Mr. Quinn joined the company in 1956. He had been assistant to the president of Raytrie Knitting Mills.

Frank W. DeFriece, Jr., has been elected to succeed his father, Frank W. DeFriece, as president of **The S. E. Massengill Company.** The latter will remain as chairman of the board of directors, and a member of the company executive committee. He had been president since Dr. Massengill's death in 1946. The new president is a grandson of Dr. Massengill. He joined the firm that same year in the chief pharmacist's office, and became plant superintendent in 1950, general manager in 1953, and administrative vice-president in 1959.

Reheis Company, Inc., has appointed Milton E. Abraham director of research. He had been chief development engineer at the Nepera Chemical Division of Warner-Lambert Pharmaceutical Co., Inc., and before that was project engineer at Takamine Laboratory Division, Miles Laboratories, Ind.

The Union Carbide Plastics Company, Division of Union Carbide Corporation, has appointed Paul B. Hanrahan technical sales representative in the midwestern region. He is located in the St. Louis office, 122 No. Kirkwood Road, St. Louis, Mo.

Clifford A. Scott has joined the **Animal Nutrition Division of Hoffmann-La Roche Inc.,** to serve under the division director Carl J. Hasbrouck as sales manager. For the past 14 years Mr. Scott has been with Merck & Company, most recently as sales manager for the northwest region of the Agricultural Department.

Edward B. Walker, Jr., has been elected to the board of directors of **Ortho Pharmaceutical Corporation.** He is also vice-president and general manager of Ortho Pharmaceutical (Canada) Ltd., in Toronto, a position he has held since 1958. Prior to that he served in various other capacities with the company.

Dr. James Y. P. Chen has been appointed director of clinical pharmacology in the research and medical department of **Ames Company, Inc.** Dr. Chen had been professor of pharmacology at Marquette University School of Medicine, Milwaukee, Wisc. He has had numerous research and teaching appointments both in the United States and in China.

Mrs. Ida Crawford Stewart has become merchandising coordinator for **Coty, Inc.** She was formerly associated with Bristol-Myers Company, as was also John Murphy, who is Coty's new director of market research. Mrs. Eileen G. Brennan has been named product manager for the Coty treatment line. She was formerly with Helena Rubinstein, where she held a similar position.

James S. Hamilton, assistant to the president of the **Potdevin Machine Company** and 25 years with the firm, has been named vice-president in charge of sales of the company's bag machine division.

From left to right: David Garlen, director of research for Lanolin Plus, Inc.; David W. Black, executive vice-president, Lanolin Plus; Mauri Edwards, general sales manager, Pharma-Craft Co.; and Charles R. Rivet, special representative in the Middle East for Cyanamid International.

Lanolin Plus, Inc., has appointed David Garlen director of research, and David W. Black executive vice-president, the latter to succeed C. R. Ruston. Mr. Garlen has been assistant research director since 1958. Mr. Black, returning to the cosmetic-pharmaceutical industry after two years as president and director of American Loose Leaf Corp., had formerly served as assistant to the president of the Lambert Pharmacal Company and vice-president of the ethical pharmaceutical division. He was later vice-president of the Richard Hudnut Division when the Lambert organization merged with Warner-Hudnut.

Mauri Edwards has been named as general sales manager, Alan E. Woltz as assistant general sales manager, and Elmer E. Gaub, Jr., a national field sales manager, by **Pharma-Craft Company.** Mr. Edwards had been marketing assistant to the scientific director of Joseph E. Seagram & Sons, Inc. Mr. Woltz had been sales administration manager for Pharma-Craft, and Mr. Gaub, east central district sales manager.

Charles R. Rivet has been made special representative of the pharmaceutical department in the Middle East for **Cyanamid International, Division of American Cyanamid Company.** His headquarters are in Beirut, Lebanon. Mr. Rivet was previously the firm's district sales supervisor for pharmaceuticals in western Europe.

The **Stepan Chemical Company** has appointed Dr. David B. Hatcher, formerly vice-president and general manager, as executive vice-president, and Wilfred J. Crepeau as assistant to the executive vice-president. Mr. Crepeau has been assistant general manager. The appointments are part of a corporate realignment of executive responsibilities in connection with Stepan's acquisition of Maywood Chemical Company and Ris-Van, Inc.

Burroughs Wellcome & Co. (U.S.A.) Inc. has appointed C. F. Baker as manager of the firm's newly created Marketing and Advertising Division, which includes the marketing, advertising, and professional services departments. Mr. Baker has been with the company since 1941, most recently serving as advertising manager. C. A. Parish, Jr., who has been appointed to that position succeeding Mr. Baker, has been assistant to the advertising manager since 1955.

Dr. Stephan Jellinek has joined the perfume staff of **Polak's Frutal Works, Inc.,** Middletown, N. Y. During the past several years he has been associated with the perfume department of P.F.W. in Amersfoort, Holland.

Louis Brennesholtz, manager of operations for **Yardley of London, Inc.,** has been appointed a director of the company, to fill the vacancy on the board created by the retirement of Edwin B. Millar, former secretary-treasurer. Mr. Brennesholtz, manager of operations for the American company for three years, joined Yardley 12 years ago.

Aerosol Techniques, Inc., has made the following new appointments: Philip H. Kleppe, Jr., research and development chemist, is now manager of quality control; Dr. Peter Sgaramella, who has been with the firm since its inception, is now assistant plant manager in charge of chemical manufacturing; Charles L. Biancheri, with ATI for four years, is assistant plant manager in charge of production and packaging.

David B. Hatcher, appointed executive vice-president, and Wilfred J. Crepeau, as assistant to him, by Stepan Chemical Company; C. F. Baker, manager, Marketing and Advertising Department, Burroughs Wellcome & Co.; Dr. J. Stephan Jellinek, Polak's Frutal Works, U.S.A.

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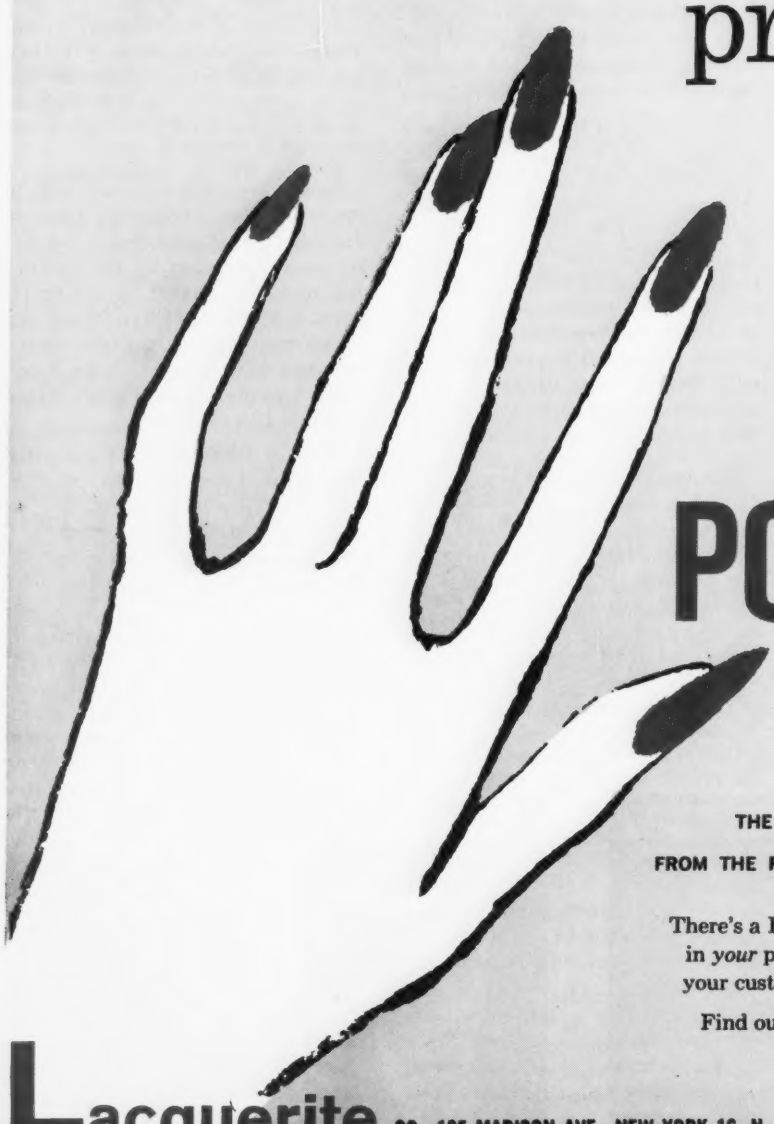

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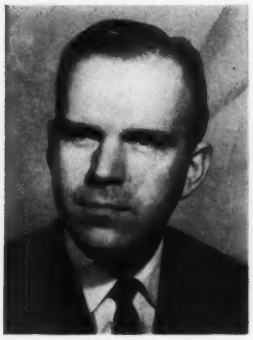


From left to right: George D. Pickett and Joseph R. Breisch, assistant sales managers for Lactose of the Western Condensing Company; John T. Dillworth, director of sales for Wyeth International Limited; and Joseph J. Ruvane, Jr., now vice-president-marketing, for Organon Inc.

George D. Pickett and Joseph R. Breisch have been appointed assistant sales managers for all grades and granulations of Lactose by **Western Condensing Company, Division of Foremost Dairies.** Mr. Pickett, who has been with the company since 1958, is responsible for the western states, and Mr. Breisch for the eastern states. Mr. Breisch began with Foremost in 1955.

Wyeth International Limited has named John T. Dillworth as director of sales with responsibility for sales in all of Wyeth's foreign operations. Mr. Dillworth joined the firm in 1958 as assistant to the director of sales, after serving as export sales manager for the Vick Chemical Company.

New vice-president-marketing for **Organon Inc.** is Joseph J. Ruvane, Jr. Mr. Ruvane joined Organon in 1948 as a bulk sales representative. In 1958 he became director of marketing. Other appointments, all in the marketing department, include: Richard A. Ulrey, formerly a regional manager, now field sales manager; George C. Andreassi, formerly field sales manager, now director of marketing services; Irwin M. Lerner, formerly assistant advertising manager, now advertising manager; Charles O. Conrad, Jr., formerly bulk sales representative, now bulk sales manager; Marion J. Cronin, formerly with Smith Kline & French Laboratories and Personal Products Corporation, as market research manager; and Bernard Handleman, who had been a professional sales representative, now sales training director.

Joseph Daffner has been elected executive vice-president of **Blair Laboratories, Inc.** He has been general manager and director of sales since 1959, when he helped organize the company.

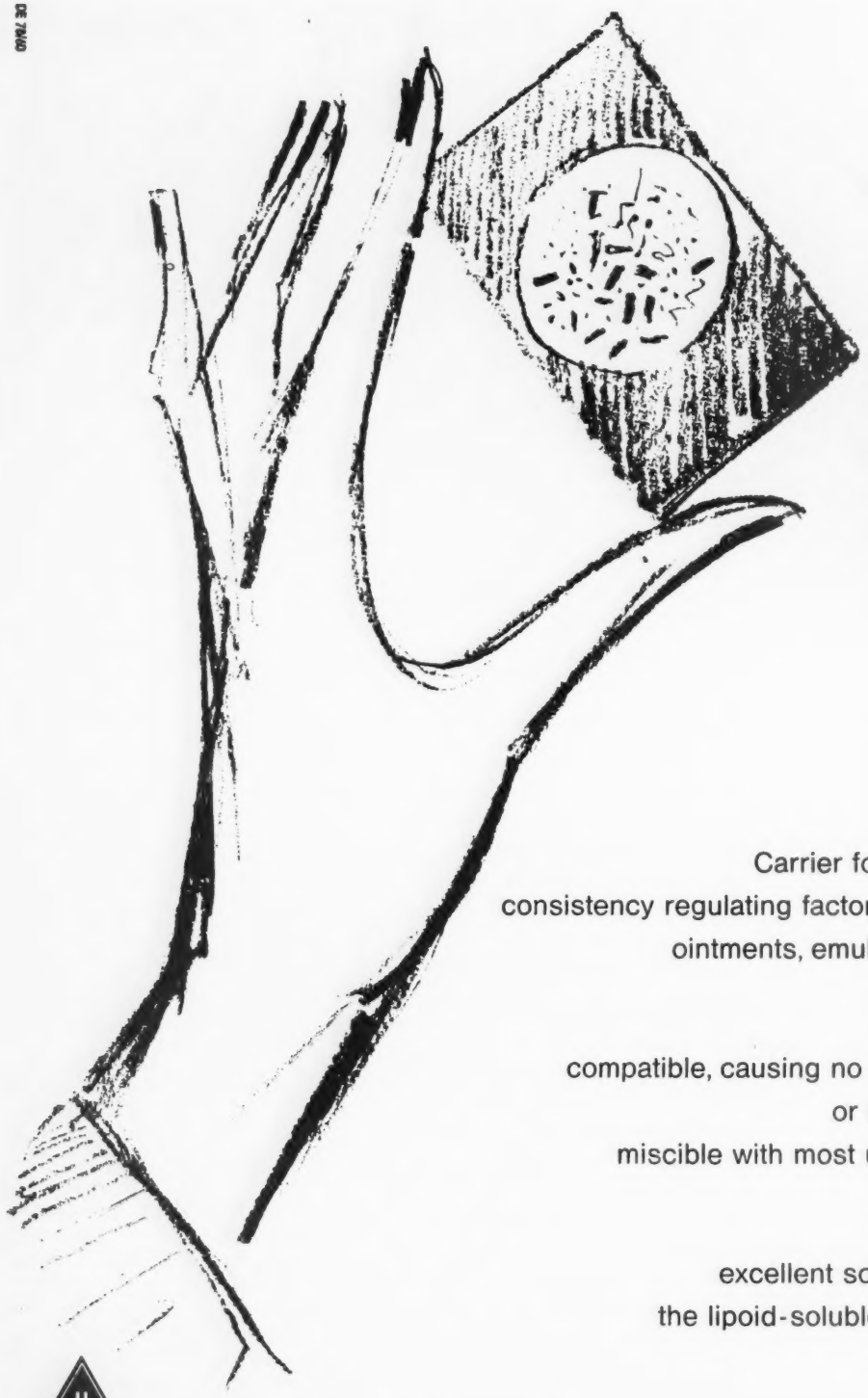
New director of international operations of the **Lehn & Fink Products Corporation** is William V. Reynolds, who formerly served as vice-president of the International Division of the Vick Chemical Company.

Emery Industries has announced three additions to its research department staff: Herbert G. Rodenberg, Paul J. Kemper, and John F. Morrow. Mr. Rodenberg, formerly with U. S. Industrial Chemicals Company, is engaged in investigating oleochemical derivatives. Mr. Kemper, who served with Interchemical Corporation's finishes division, is also in the derivatives section. Mr. Morrow is in the polymerization section. Emery has also added four men to the development and service department: Joseph J. Seiwert, Fred C. Stroehlien, Jack Boylan, and Paul M. Clark.

The **Injection Molding Company,** subsidiary of the **Rexall Drug and Chemical Company,** has promoted E. M. Davis from director of purchasing to vice-president, and Frederick L. Kocher from district sales manager to general sales manager. Mr. Davis has been with IMCO since 1949, Mr. Kocher since 1956.

Dr. Joseph P. Simko, Jr., has been appointed to the analytical and instruments section of the corporate research and development department of the **Colgate-Palmolive Company.** He is returning to Colgate, where he was a member of the research staff in 1957, after three years with the Esso Research and Engineering Company. Wilson F. Fowle, Jr., has joined Colgate-Palmolive as Wildroot product manager for the **Toilet Articles Division.** He had been a senior account executive with Benton & Bowles. Dr. David H. Gould, formerly administrator of extramural scientific research with Schering Corporation, has been named administrator of grant research, **Colgate-Palmolive Laboratory for Oral Health Research,** a newly created position.

The **Schering Corporation** has appointed Dr. Edward Henderson to the newly created position of vice-president for medical affairs. Dr. Henderson has served as vice-president for clinical research since 1952, and has been with the company for 21 years. Dr. George Babcock, who joined the firm in 1948, has become director of the newly created medical research division, which consists of the departments of clinical investigation, clinical pharmacology, and pathology and toxicology. The newly organized biological research division is to be headed by Dr. Preston Perlman, who has been manager of the biochemistry department since 1951. The company has also announced several marketing division promotions. A. Arthur Lowenthal, who began with Schering in 1956 as a member of the management research department, has become product manager. James A. Prior, who is now sales communications manager, was formerly sales editor. New advertising copy chief is Jane M. Murphy. She joined the company in 1956 as a copywriter. Orval F. Hurley, now assistant art director, has been in the art department since 1956. Stefan Bogen has been promoted from medical copywriter and advertising copy chief to the position of chief medical writer in the medical service department. Finally, Dr. Sarah R. Norred, with Schering for six years, is now a medical writer in the medical service department.



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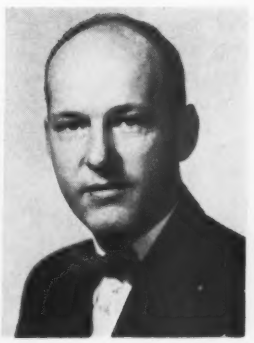
From left to right: Robert Cameron, general manager of the Parfum Lorle Division, International Products Corporation; Dr. Harld Schwartz, director of toiletries and cosmetics research, Warner-Lambert Research Institute; Dr. Charles E. Hough, medical director of Maltbie Laboratories Division, Wallace & Tiernan, Inc.; and John Hartwell, who has been appointed product manager in the marketing division of White Labs.



International Products Corporation has appointed Robert Cameron, formerly eastern director of *Esquire* magazine's retail sponsorship program, as general manager of its **Parfum Lorle Division.** Mr. Cameron's prior experience includes serving as sales manager of Mauvel Ltd., and executive vice-president of Parfums Marcel Rochas, Inc.

In the **Warner-Lambert Research Institute,** Dr. Harold Schwartz has been appointed director of toiletries and cosmetics research, succeeding Dr. Donald H. Powers, who has retired but will continue as a vice-president of the Research Institute in a consulting capacity. Dr. Schwartz was formerly director of pharmacology with Revlon. Dr. Martin M. Rieger has been promoted to the new position of director of toiletries and cosmetics laboratories at the Institute. Prior to joining Warner-Lambert in 1955, he was research chemist with Lever Brothers. Paul Elliott-Smith has been appointed to the newly created position of new products director, **Warner-Lambert Products Division, Warner-Lambert Pharmaceutical Company,** and Walter J. Bowe, formerly media director in the Division, is now product director for Bromo-Seltzer, succeeding Mr. Elliott-Smith. Robert B. Clark, senior vice-president of the **Warner-Chilcott Laboratories Division** since 1958, has been promoted to the newly created position of executive vice-president of the Division. William N. Enes, who has been director of sales, has become vice-president, marketing, of Warner-Chilcott.

Charles E. Hough, M.D., has joined the research department of **Wallace & Tiernan Inc.,** as medical director of the **Maltbie Laboratories Division.** He joined Wallace in 1958 as assistant medical director.

New product manager in the marketing division of **White Laboratories** is John Hartwell, who was formerly product manager at Smith, Kline & French.

Dr. W. Arthur Purdum has been named vice-president in charge of production and development of **Burroughs Brothers Manufacturing Company.** Dr. Purdum had been professor of hospital pharmacy at the University of Maryland since 1947, and chief pharmacist at Johns Hopkins Hospital for 14 years.

J. Mark Hiebert, president of **Sterling Drug Inc.,** has been elected to the additional office of chairman of the board, succeeding the late James Hill, Jr. The board has also elected George S. Hills, a director, as vice-chairman and general counsel. Mr. Hiebert joined Sterling in 1934, has been a director since 1949, and was executive vice-president from 1950 to 1955. Mr. Hills, LL.B., has served as a director since 1940. In the **Glenbrook Laboratories Division,** Glenn W. Johnston, divisional vice-president, has been appointed to the position of administrative assistant to the director of marketing, and B. Felix McGuigan has been made administrative assistant to Glenbrook's executive vice-president. Mr. Johnston has been with Sterling since 1958, Mr. McGuigan, since 1959, before which he was assistant product manager with Procter and Gamble. Charles L. Czermak, vice-president in charge of sales for **George A, Breon & Company** since 1955, has been elected president. Mr. Czermak joined Breon's sales organization in 1946, and became general sales manager six years later.

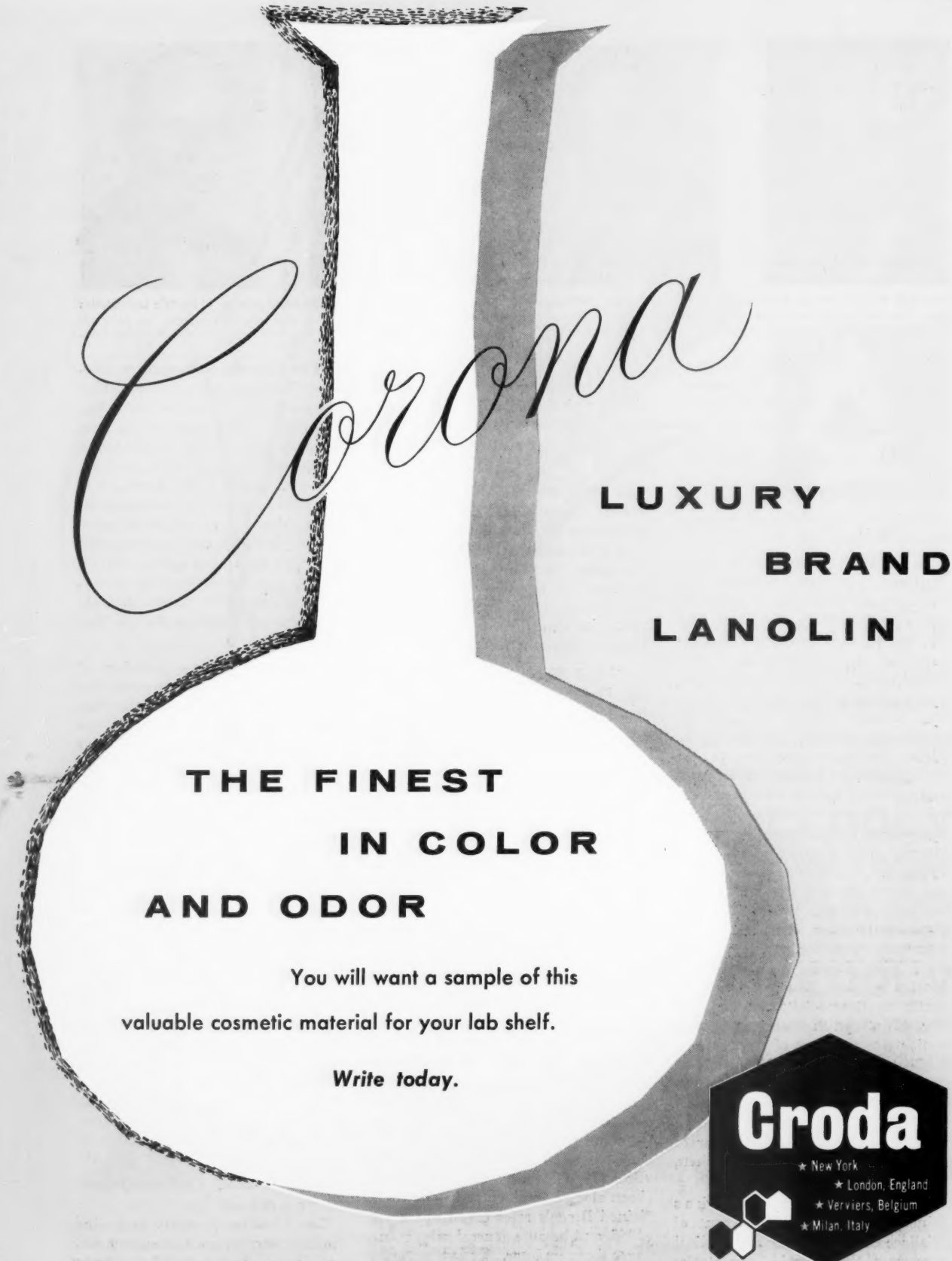
The **J. H. Day Company, Division of The Cleveland Automatic Machine Company,** has announced four changes in administrative posts. Ray D. Allison, chief engineer, is now vice-president of the parent company and general manager of the division. Robert A. Miller, a sales manager, is now sales manager for the entire division. Manager of industrial sales, Jack L. Diltz is now product and market research engineer. Martin Miller, vice-president of the parent company, has new duties that include over-all planning for the Day Division.

Charles A. Thomas, president of Monsanto Chemical Company, has been elected a member of the **Plax Corporation** board of directors, replacing Charles S. Cheston, who has retired as a director of both Monsanto and Plax. Mr. Thomas has been a member of the board for Monsanto since 1942, and president of the firm since 1951.

Snyder Corporation, manufacturer of Colton production filling, tableting, areosol, and packaging machinery, has elected S. David Harrison to the board of directors. Mr. Harrison joined the company in 1945 as assistant comptroller and has been treasurer since 1956.

Johnson & Johnson has named Irving A. Quackenboss product director of proprietary and baby products, and Robert J. Shaw group director of surgical dressings and the Band-Aid Adhesive Bandages Division. Mr. Quackenboss had been group director of baby products, and Mr. Shaw had headed the Band-Aid Division.

David Seidler, formerly packaging engineer for Revlon, has been named packaging coordinator for **Chesebrough-Pond's Inc.**



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Subsidiary: Hummel Lanolin Corp., 185 Foundry Street, Newark 5, N. J.

J. M. Young has been named director of chemical control for the **Merck Chemical Division of Merck & Co., Inc.,** succeeding Dr. B. L. Clarke, who is undertaking a special assignment to conduct studies of chemical control operations in the drug industry. Mr. Young has been manager of liaison and testing since 1957. Stuart T. Henshall has been elected vice-president and general manager of **Merck Sharp & Dohme,** in which capacity he becomes chief executive officer of the firm, succeeding the late John G. Bill. With the company since 1930, Mr. Henshall began as an accountant, becoming vice-president in 1952. In the same division, Eugene L. Kuryloski has been elected vice-president of marketing. He joined the firm in 1937 as a pharmaceutical sales representative and became director of sales and marketing in 1958 after holding several other posts. Newly appointed in the **Merck Sharp & Dohme Research Laboratories** are Dr. Cornelius J. O'Donovan as director of medical specialties, and Dr. Elmer H. Funk, Jr., as associate director of medical services, both at West Point, Penna. Dr. O'Donovan was formerly with the Upjohn Company, where he received the Upjohn Award while he was senior staff physician in the department of clinical investigation. Dr. Funk continues to serve on the staffs of Jefferson Medical College, Pennsylvania Hospital, and Bryn Mawr Hospital.

SCC Officers for 1960 New York

The 1960 officers for the New York Chapter of the Society of Cosmetic Chemists are: Dr. John M. Longfellow, Colgate-Palmolive Company, chairman; Saul Bell, Chesebrough-Pond's, chairman-elect; Martin Katz, Revlon, Inc., treasurer; and Agnes Korte, Givaudan-Delawana, secretary.

Perfumers Elect Officers

Officers of the American Society of Perfumers, Inc., were recently elected. President is Bernark Polak, Polak's Frutal Works; first vice-president, William H. Barlow, Orbis Products, Inc.; second vice-president, Herbert Sommer, Prince Matchabelli; secretary, Mrs. Dorothy A. Douglass, Shulton, Inc.; and treasurer, Edwin D. Morgan, Jr., Lever Brothers Company.

Chairman of the board of directors is Dr. Oliver L. Marton, Shulton, Inc. The directors include the officers and: Walter Lengsfelder, Fleuroma, Inc.; Elmer L. V. Sulik, van Ameringen-Haebler Division; John Hancock, Warner-Hudnut; and Edward J. Shuster, van Ameringen-Haebler Division.

Bernard d'Escayrac Chosen

Bernard d'Escayrac, president of Guerlain, Inc., has been elected president of the Perfumery Importers Association, to succeed the late Maurice Levy.

Hart Harris Re-elected

BIMS of Boston has re-elected Hart Harris, Jr., of S. B. Penick & Company as chairman. This will be Mr. Harris' tenth year in office.

New executive committee members include James A. Dugan, Dodge & Olcott, Inc., and A. L. Weston, B. B. Chemical Company.

The annual ladies' night will take place on April 30.

Members of the standing committees of the CIBS for 1960, left to right: Paul Alexander, Drug & Cosmetic Industry; Frank Ponds, Dominion Products, Inc.; Allen T. Stewart, Parfait Packaging Company, Inc.; Dallas D. Roush, Owens-Illinois Glass Company; CIBS President Lamson M. Scovill, Scovill Manufacturing Company; Shockley C. Gamage, Magnus Mabee & Reynard, Inc.; Edgar R. Ellis, Charabot & Company; Shaw Mudge, P. Robertet, Inc.; George J. Schumacher, Chesebrough-Pond's, Inc.; and Eugene M. Roberts, Lanvin Perfumes, Inc.; H. Robert Miller, White Metal Manufacturing Company; Howard T. Kneff, Ar-Kay Printing Company, who are not in the picture.

Francis Boyer, (right) Smith Kline & French Laboratories board chairman, receives Procter Medal and citation from Walter P. Miller, Jr., of the Philadelphia Drug Exchange, for "leadership in the fields of mental health, medical education and pharmaceutical research."

L. H. Keeper Made President

L. H. Keeper of Abbott Laboratories was recently elected president of the Chicago Perfumery, Soap & Extract Association. John P. Helfrich, Helfrich Laboratories, is vice-president, Harold W. Jelly, Walter Jelly & Company, is secretary, and George G. Kolar of Kolar Laboratories is treasurer.

CAIA Elects Officers

The Chemical and Allied Industries Association of Michigan has elected the following officers for the coming year: Russel Haeger, The Dow Chemical Company, president; William F. Harlton, Detroit Veterinary Supply Company, vice-president; J. Pearson Stanley, R. P. Scherer Corp., treasurer; Milford R. Polley, Mallard, Inc., secretary.

Educators Elect Toohy

John J. Toohy, general manager, E. R. Squibb & Sons, Division of Olin Mathieson Chemical Corp., was re-elected president of the American Foundation for Pharmaceutical Education, and Charles D. Doerr, senior vice-president, McKesson & Robbins, Inc., was elected vice-president.

HNI Appoints Marc Woodward

Marc Woodward has been appointed executive director of the Health News Institute, succeeding Chet Shaw, who recently resigned. Mr. Woodward has been HNI assistant executive director since 1956.

New Officers of the New York Chapter of the Society of Cosmetic Chemists, left to right: Martin Katz, treasurer; Agnes Korte, secretary; John Longfellow, chairman; Saul Bell, chairman-elect.

Forty Years with PFW

John ter Veer, secretary of Polak's Frutal Works, Inc., Middletown, N. Y., recently celebrated his fortieth year with the firm. He joined the company in Holland in 1920 and, after serving in the accounting department there for three years, was transferred to the U. S.

At a dinner in his honor, Mr. ter Veer was given a Hi-Fi set by the board of directors.

Siegesmund Retires

John C. Siegesmund, vice-president in charge of engineering for Eli Lilly and Company, has retired. He continues as a member of the board of directors.

Mr. Siegesmund joined Lilly in 1919 as a development engineer and became a vice-president in 1952.

Squibb Receives Award

E. R. Squibb & Sons recently received an award honoring the firm for its contribution in the field of dentistry for the handicapped, from the Academy of Dentistry for the Handicapped. The award was presented at the Academy's seventh annual meeting in Chicago, to Edward P. Shanahan, manager of dental products, by Dr. Manuel M. Album, a past president of the Academy. It cites Squibb for contributing an outstanding exhibit on oral conditions pertaining to the handicapped.

Jennings 25 Years with Merck

Thomas E. Jennings, public relations counsel of Merck & Co., Inc., recently completed 25 years with the firm. He began in the sales promotion department in 1935, became the head of the public relations department when it was founded in 1945, and counsel in 1957.

Danilek Made a Knight of Malta

At a ceremony in St. Patrick's Cathedral, at which Francis Cardinal Spellman was Celebrant, Joseph A. Danilek, president of Mary Chess, Inc., and Parfums Schiaparelli, Inc., was made a Knight of the Sovereign Military Order of Malta.

Packaging Consultants Established

The new practice established by A. Herzka, B.Sc., A.R.I.C., called Pressurized Packaging Consultants Ltd., is located at Ashbourne House, Alberon Gardens, London, N.W. 11; phone, Speedwell 9667/8.

Wheaton Forms New Company

Frank H. Wheaton, Jr., president of the Wheaton Companies, has announced the formation of the Wheaton Plasti-cote Corporation, with executive and sales offices in Millville, N. J., and factory in Mays Landing, N. J. This places the plastic coating of bottles for pressurized products under a separate management. Robert N. Allen is vice-president and general manager.

Shulton Names Voss

The Voss Company, 2631 Southwest Drive, Los Angeles 43, Calif., has been appointed as sales representatives of the Fine Chemicals Division of Shulton, Inc., in 11 western states.

New Acquisitions, Plants, and Locations

Parry Laboratories has acquired the Elmo line of cosmetics. . . . **Stepan Chemical Company** of Chicago has purchased Ris-Van, Inc., fertilizer firm in Iowa, through an exchange of stock. It will be a wholly owned subsidiary operating under the present management, with Kenneth Van Duzer as president. . . . **The Dow Chemical Company** has selected Kalama, Washington, as the site for a phenol plant, to be completed in 1961. . . . An expansion and modernization program doubling the floor space in the control and research laboratories of the **Reheis Company, Inc.,** has just been completed. . . . New office of **Givaudan-Delawanna, Inc., Givaudan Flavors, Inc., and Sindar Corp.** in Los Angeles is at Suite 3, 6022 West Pico Blvd., L.A. 35, Calif.; phone, WEbster 9-3101. . . . Plans have been announced for the construction of a multi-million-dollar glass manufacturing plant near Forest Park, Atlanta, Georgia, by **Knox Glass, Inc. . . . Witco Chemical Company, Inc.,** has acquired Tar Distilling Company, Inc., and Old Colony Tar Company, Inc. They will be wholly owned, separately operated subsidiaries. J. Porter Brinton, Jr., board chairman of the acquired firms, will also serve as a director of Witco.

Paul E. Forsman (with tray), vice-president, C. H. Forsman Company, congratulated by his brothers, John (right) and Peter (rear), son Paul, Jr., (left) and nephew Charles (far right), upon being named BIM of the year at the recently held BIMS annual dinner at the Hotel St. Regis, New York City.

Dow Laboratories Renamed

Two of The Dow Chemical Company's major laboratories involved in fundamental research have been renamed in closer keeping with their actual work. The Electrochemical Research Laboratory is now known as the Electrochemical and Inorganic Chemical Research Laboratory, and the Spectroscopy Research Laboratory, as the Chemical Physics Research Laboratory.

Dr. R. H. Boundy, vice-president and director of research, announced the changes. Directors, respectively, of the two laboratories are Dr. R. D. Blue and Dr. Norman Wright.

T. D. Spies

Dr. Tom Douglas Spies, a physician famous for his work in nutrition, died in New York City at the Memorial Center for Cancer and Allied Diseases on February 29, at the age of 57.

Dr. Spies was among the first to prove that pellagra was caused by deficient diet, and also to use nicotinic acid as an inexpensive cure for the disease.

At his death he was professor of nutrition and metabolism, and chairman of the department, at Northwestern University Medical School; director of the Nutrition Clinic at Hillman Hospital, Birmingham, Alabama; visiting professor of medicine at the University of Alabama School of Medicine; and president-elect of the Southern Medical Association.

A group of the country's leading industrialists organized the Spies Committee for Clinical Research in 1943 to support his work for five years with an annual grant of $150,000. He and his staff developed vitamin B complexes as cures for certain kinds of anemia, spinal ailments, eye disorders, tropical sprue, and types of mental illness.

In 1943 he was appointed a member of the Food and Nutrition Board of the National Research Council, and he served as consultant on tropical medicine to the Secretary of War in World War II.

It was said that Dr. Spies never accepted a fee from a patient.

S. DeWitt Clough

S. De Witt Clough, retired board chairman of Abbott Laboratories of North Chicago, died at his home in Chicago on January 31, at the age of 80.

Mr. Clough had retired from Abbott in 1952, in which year he was elected managing director of the Chicago Heart Association, a post he held until 1958. He began with Abbott Alkaloidal Company as advertising manager in 1903, working closely with Dr. Wallace Abbott, and becoming secretary and a board member in 1915, the year after the firm had taken its present name. He became president in 1933 and board chairman in 1946.

He is survived by his widow, a son, and two grandchildren.

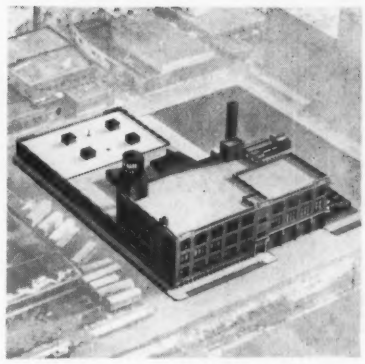
D. A. McGinty

Dr. D. A. McGinty, a well-known research scientist with Parke, Davis & Company, died January 26 in Harper Hospital, Detroit, Mich., after a short Illness. He was 63 years old.

He first joined the company to do endocrine research, in 1933. In 1940 he was appointed senior research physiologist, and two years later was named group leader in physiological research. In 1956 Dr. McGinty was promoted to laboratory director in physiological research.

Dr. McGinty leaves his wife, two sons, and a daughter.

New Endo manufacturing and sales headquarters at Amores 1734, Mexico City, from which all Endo Laboratory pharmaceuticals are now available. Manufacturing area is 12,000 of the 15,000 square feet; the plant will employ 100; and the offices of Arturo Fonseca, general manager, and Jesus Aguilera, sales manager, are also included. The full line will be produced in this new plant.



G. Barr and Company's new 15,000 sq. ft., one-story building adjoining the old building at 3601 S. Racine St., Chicago, provides 15 per cent more warehouse and manufacturing space. Total area now extends a full block.

James Martin

James Martin, perfumer and compounder for Albert Verley & Company for the past ten years, died suddenly at his home in Union, New Jersey, on January 24.

Mr. Martin, who leaves a wife and three children, had been active in the perfumery field for many years.

Mrs. William Haebler

Mrs. Ethel Kurth Haebler of Pelham Manor, a director of International Flavors and Fragrances, Inc., died February 11 at University Hospital in New York City. She was 60 years old.

The widow of William T. Haebler, who was vice-president and treasurer of van Ameringen-Haebler, Inc., at the time of his death in 1956, Mrs. Haebler was also a director of the Kurth Malting Company.

She is survived by three daughters and five grandchildren.

William C. Dunlap

William C. Dunlap, manager of purchasing of The New Jersey Zinc Company, died February 18 at his residence in New York City. He was 66 years of age.

Mr. Dunlap joined the New Jersey firm in 1915 as a civil engineer in the purchasing department, and became purchasing manager in 1955.

V. Dewey Windle

V. Dewey Windle, president of Eileen Courtney Cosmetics Corporation, New York, died February 19 in Chicago. He was 62 years old.

ONE COLTON MACHINE

replaces EIGHT ordinary machines

and boosts NR tablet output 70%

Lewis-Howe Company of St. Louis, famous fifty-year-old manufacturer of TUMS and NR TABLETS, has replaced two sluggers, one granulator, five rotary presses with one Colton No. 249 Double Rotary Tablet Press equipped with Colton No. 245 Induced Die Feeders* and thereby raised NR Tablet output from 3,000 to 5,100 per minute, an increase of 70%. This was possible through the inclusion of Colton No. 245 Induced Die Feeders which provide:

1. Direct tableting of many materials without slugging or granulating and with finer elegance.
2. Uniform density, accurate weight; better disintegration through using powders instead of granules.
3. Positive die fills at higher speeds.
4. Tablet capping and laminating substantially reduced.
5. Practical tableting of 2-layer tablets with minor change-over.
6. Increased production at a fraction of the cost of other equivalent capacity equipment.

In installations such as this there are these collateral gains:

1. Appreciable gain in floor space.
2. A cleaner department because this single Colton press replaces eight machines.
3. Substantial reduction in general area maintenance, mechanical care, power consumption, supervision.
4. Lower operating cost.

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*Patents in process. Available on all Colton rotary presses, including those now in use.

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Management Forum

BY FRANCIS CHILSON
INDUSTRIAL CONSULTANT

Automation

With reluctance we must accept this word which is commonly regarded as something new as a process but in reality is a summation of the mechanical progress which has been taking place at an ever accelerating rate since the beginning of the Industrial Revolution. Initially, all progress was mechanical insofar as production was concerned, but the discovery of electricity gave it a new dimension and accelerated the process. Lately refinements in electricity applications, called electronics, are accelerating progress still more. Atomic energy has given a new dimension and new direction. So has the production of electricity from chemical cells and the direct conversion of heat into electricity. We don't know where the hell we're going but we certainly are traveling fast!

All this progress disturbs the unions and they will put a brake to it if they can. Unions ignore history. History shows that mechanical progress eliminates jobs of one kind and eventually creates jobs of another in much greater numbers. But there is a time and place lag involved.

A one-industry town or city can suddenly be dumped into the doldrums by the fact that it's supporting industry has become obsolete. That is "place lag." But even in industrial areas having a great variety of industries, there is a "time lag" involved in the absorption of people made idle by the closing of the factories in which they formerly worked. Of course obsolescence does not occur overnight. News of innovations usually precedes acceptance by a considerable amount of time. Usually it is ignored by dim-witted business men, who do not wake up until it is too late, and alert, modernized competitors have taken all the business. But it is not only the bosses who do not move fast enough to keep abreast of progress; workers likewise hesitate to quit their jobs even as they witness the steady decline of the company that employs them.

Temporary unemployment caused by automation will always be with us. Unemployment insurance is universal now but in many circumstances it is not enough to support the workers who through no fault of their own have been made jobless by automation. Some firms that are modernizing their works have established means of obtaining jobs for workers who are to be eliminated. Armour and Co., International Harvester, and National Biscuit have set up programs to offset the hardship of dislocation caused by automation.

More education is needed. Mechanization is only one cause of layoffs of workers. Product improvement, which simplifies the processes of making a product, often multiplies the capacity of existing equipment and minimizes the need for labor. Changes in material handling methods and plant layout frequently increases potential plant capacity by as much as five hundred per cent and, consequently, reduces the need for labor unless, of course, the additional plant capacity can immediately be absorbed by increased sales.

Automation forces social changes and the process cannot be stopped by the unions or anyone else. We must keep in the forefront or lose our place in the world. In countries where labor is cheap, like Russia and Japan, automation is being accelerated as fast as it can be done. We must do the job faster than they can, to offset the lower labor costs of our external competitors—or go under.

Internal Politics

To repeat a favorite aphorism of mine: "When two men work together you have organization; three men, politics." Politics is the art of getting along together with the minimum of friction. When politics are clean they are essential, for it is better to persuade a man to do a necessary job than it is to kick him in the backside and make him do it. But un-

Most Versatile Multiple Filler

MODEL B-49 STRAIGHTLINE VACUUM FILLER. For liquids and semi-liquids. Fills 4 to 9 containers simultaneously; up to 50 small containers p.m. Lever engages and disengages filling stems, otherwise operation is automatic. Adjustable for all container heights up to 14″; miniature and standard bottle finishes, gallon F-style cans, wide mouth jars. Stainless steel is standard; plastic for filling special solutions on order. Discharge conveyor optional. Special requirements engineered to specific needs. For quotation, please state requirements or write for "Bulletin B-49."

LOOK TO US FOR EVERY LIQUID FILLING NEED

U. S. liquid filling machines cover a wide range of fully automatic, semi-automatic and hand filling equipment. Basic machines may be custom-engineered to serve specific requirements. Our years of liquid filling know-how enable U. S. engineers to custom-engineer your filler to spark your packaging pace. For special operation or for packaging recommendations, please address the home office. Bulletins available on every type machine.

Continuous Filling

MODEL B-2 VACUUM FILLER. Fills 2 containers while filled containers are being removed and empties loaded. Thus, operation is continuous. Handles containers up to 4⅛″ dia., 13″ hi. Interchangeable stainless steel filling stems — plastic available. Will fill directly from drum or supply container on the floor. Portable. Has cord and plug. Write for "Bulletin B-2."

E-Z TWO TUBE AIR CLEANER
Companion unit to Semi-automatic fillers. Air cleans up to 40 containers per minute. Write for "E-Z" Bulletin.

No Power Required

U. S. SIPHON FILLER. For all liquids, foamy products and products that do not permit agitation. Stainless steel tubes. Glass-lined tank. For all containers. Write for the "Siphon Bulletin."

U. S. HAND FILLER. A precision unit of high quality for maximum efficiency. Ideal also for laboratory work. Write for "Hand Filler Bulletin."

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fortunately most of us associate the word politics with nefarious practices. We should have another word for the sort of politics that puts oil, instead of sand, on the bearings of the revolving wheel of progress. While all organizations are imbued with politics, some are infected with rotten politics—perhaps I should say a majority are to some extent infected with rotten politics.

Recently I had some dealings with a large organization and was depressed by the buzzing of dirty politics. It was like a beehive with the Bigboss the queen bee. Nobody would commit himself to any proposal whatever lest he get himself out on the end of a limb which might be cut off by his adversaries. And everybody was a potential adversary. And, when commitments finally had to be made, excessive care was taken to make certain that responsibility for mistakes could not fall upon one person. Less time was spent in that organization on creative and productive work than in evading responsibility and buttering up the Bigboss. It was revolting. When a responsibility had to be taken it was approached as warily as if it were a bomb that might go off and spoil the individual's chances of further preferment. It has been so long since I've seen an executive (so-called) seize a major responsibility and stake his job on his judgment and performance that, when it happens again, I shall be so surprised that the shock will kill me!

Soundproofing

I learned from an expert on acoustics many years ago that if one wish really to do the best possible sound-proofing job, the acoustic material should not only be applied to sidewalls as well as ceilings, but it should not be applied in a smooth, unbroken panel. Instead of hanging a ceiling under beams it is more effective to encase the beams in sound-proofing material and apply the acoustic material also to the flat ceiling. Thus, the beams interrupt sound waves, which otherwise would travel along a smooth ceiling until absorbed by the holes or interstices of the acoustic material.

We did this almost twenty years ago in the packaging department of the Chattanooga Medicine Company and the sound-proofing was and still is effective. The job would have been improved had we done the side walls also.

One of the quietest offices I have been in is the office of Aspro Nicholas, where the same theory was applied. Here, the architect made a blunder in designing the supporting steel for the office roof. So instead of hanging a sound proof ceiling from the lower chords of the trusses, we made a virtue of the blunder by instructing the architect to encase the trusses in acoustic material. This not only provided for sound interception but increased the acoustic area enormously. This office is about 30,000 square feet in area, with most of the space in a single open office, and it is the quietest office I have ever been in.

Deep pile carpet is enormously effective as a sound absorber and it should be laid in every office. Over a period of ten years it is cheaper than any sort of tile because of lower maintenance cost. But carpet costs so much more initially that everybody shies away from it.

Aspro-Nicholas Innovations

I've just had a report from Dick Seymour, plant manager of Aspro-Nicholas in England, which again proves a point that I have demonstrated time and again here in this country, namely, that given proper conditions, good equipment layout and intelligent supervision, it is easily possible to beat the output resulting from any piece rate or incentive system whatever. Dick says, "You will be interested to know that I have also scrapped the Bonus Incentive Scheme in its entirety, and, on talking with the Packaging Manager this morning, I find that not only have we maintained our productivity rate, but, in several cases have, by means which were prohibited to us under the bonus scheme, been able to increase it." *Good work, Dick!*

I might mention at this point that the Aspro organization has never had a union or a strike of any kind during the past thirty years in spite of the fact that the English plant is located in a highly unionized industrial area. I believe this to be true also of Australia where unionism is even a bit more rampant than it is in England.

Dick also reported to me on another innovation which is unusual in England. It is so novel in fact that it got a fine write up and imposing headlines in the English press. Dick eliminated the time clocks and at the same time reduced the work week by two and one half hours. The employees were delighted and on the first day of the program only one employee in 500 was late and he'd had a flat tire on his way to work. In this country the only large company I know of that does not require time-clock punching is Upjohn. Upjohn is not unionized, and no wonder. Eliminating the time clocks is one of the ways of beating the unions at their own game.

Taking America for Granted

"*In these troublous times when our future is uncertain and our mode of life threatened by malevolent external forces, we can restore our spiritual strength and regain our confidence, by drinking once again from the well springs of our own history.* (Ponder well this apposite and cogent editorial—from a woman's magazine!)

"There was a time, in this country, when even a whole day of life was not taken for granted; much less water, shelter, a safe night's sleep. Now, by reason of a uniquely bountiful heritage, we take for granted too much. We assume. Expect. Insist.

"Nowhere else in the world is this possible. Nowhere in the world is it wise. We not only accept,

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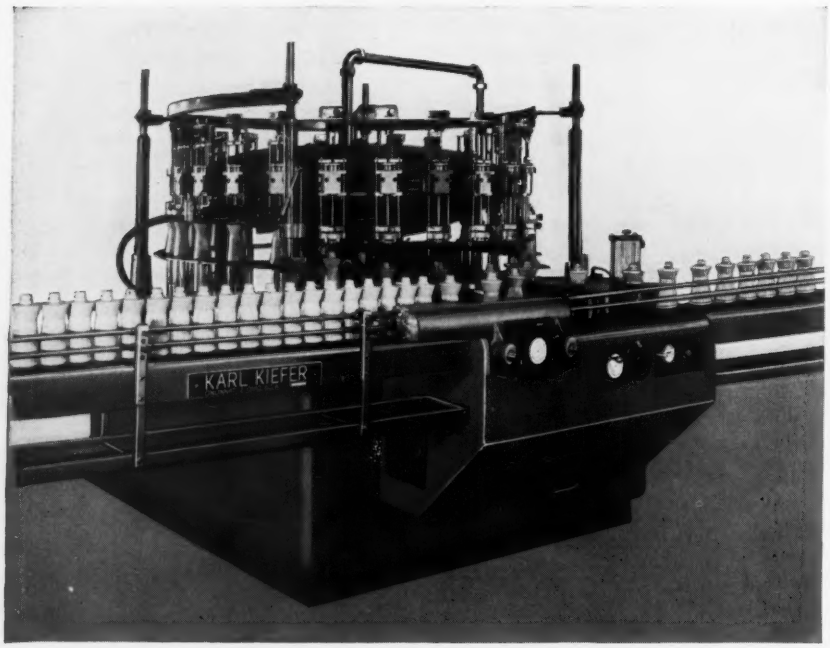

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Gives viscous materials a solid volumetric pack . . . also a volumetric fill of liquids, without splashing.

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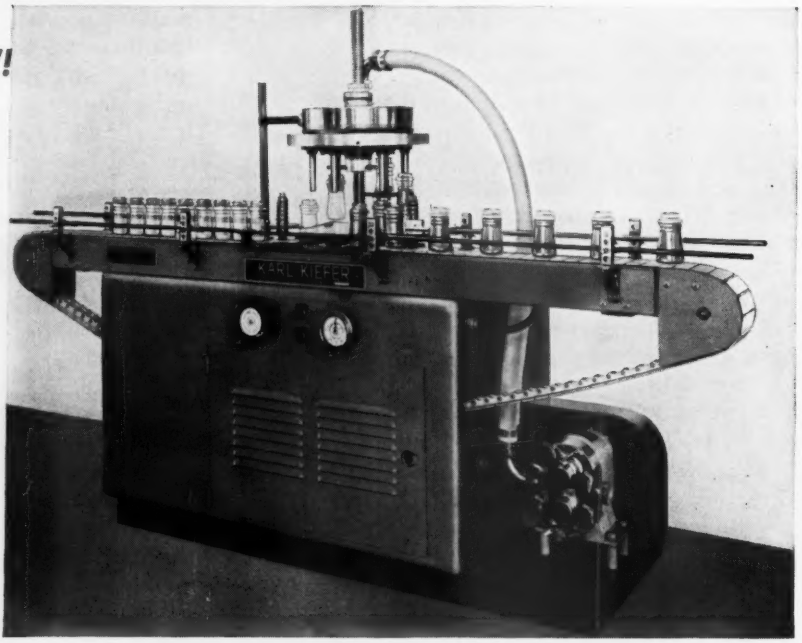

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unthinking, the great urgencies of food, shelter and clothes, but the whole spate of little things that make up a way of life, a standard of living, a pattern of security. We assume that some kind of transportation will get us to work. We take for granted the protection of our locked front door; a roof to our living room; heat, lights. We expect our children, bursting with vitality and vitamin B, to knock our hats askew with the vigor of their welcome. As breathing, we take for granted a hot bath, soap. The evening newspaper, penicillin and sodas at the corner drug store. We assume that young husbands will, with their bare efforts, make a successful future for themselves, that older husbands will retire on what, over the long years, they have put away—for savings, of course, are inviolate. We *expect* our daughters to have an evening dress. We cheerfully assume that some decent men will get voted into public office. We know that the veterans can get a GI loan, and assume that, with it, one of them will start a future U. S. Steel. Another will marry, and produce an Edison, a Jefferson, a Carver. We take for granted that we will not be shot, imprisoned, or have our 'everything' confiscated; that our children will live to grow up.

"What we forget, what we forget every day, every moment, is our own history. That it was not entirely to give us these delicacies of life, these luxuries-become-necessities that those men stayed on at Valley Forge for 22 cents a day, that Abraham Lincoln did the fine, unpopular thing, unwaveringly; that over 56,000 men died in prison camps between '61 and '64, that, later, half a million lay in their blood on foreign soil. It was not to guarantee us our ice cream and radios that innocent, bewildered women were burned at the stake, bore children during Indian attacks, suffered cruel lampooning as pioneering educators, were partners in the greatest pioneering adventure of all—the sweep to the West. It is good to remember what our simple right to vote cost other human beings. Perhaps they had no thought of us, as individuals; they were concerned with making *their* America. What they made is what we have. To take this heritage, unthinkingly, for granted is a first step to losing it."

An editorial in Vogue
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Cellular Therapy

Several years ago when I was in England I met Dr. Henry Searle Baker, who, in the Thirties, had spent eight years in cancer research, and financed it himself until he had used up his entire patrimony. His remarkable results were published in the British Journal of Medicine and also in the Lancet. In essence, Baker felt that control of cell growth was exercised locally in the human body by some mysterious chemical, and that it was due to the absence of this chemical that cells proliferated wildly in the form we know as cancer. Accordingly, his method of treatment was to make a tissue extract from healthy tissue taken from an area of a donor's body similar to the infected area of the patient, and, after proper sterility procedures, to inject it in the affected area. Thus, breast cancer was treated with breast tissue extract; cervical cancer with cervical tissue extract. The number of complete remissions he obtained was remarkable. In publishing his attested results Dr. Baker stated that he did so because he was not a properly trained scientist and hoped that the work would be continued by competent scientists. The scientists, who sometimes can be as dogmatic as medieval cardinals, raised their eyebrows and called Baker's work "utterly unscientific."

Baker's work was brought to mind when I read an article on the investigations of Dr. Paul Neihans of Switzerland in what he calls "cellular therapy" or briefly CT. Neihans is doing exactly the same thing that Baker did thirty years ago. The difference between their methods being that Neihans uses animal instead of human cells, but he uses cells from the same part of an animal that he is treating in a human being. Thus, kidney cells are used in treating kidney disorders. Thyroid for thyroid. Breast for breast. Thus, Neihans recognizes implicitly Baker's theory about local cell control. If you are interested in this subject look up Baker's articles in BMJ and the Lancet. They were published sometime during the middle Thirties. Also see the article in the December Coronet by Herbert S. Benjamin, MD, about the work of Dr. Neihans.

Mavericks in Research

The "team" concept has got hold of research procedures to such a degree that research men often insist—a bit dogmatically I think—that progress is impossible excepting through team work. To my mind this is a silly notion because the great discoveries in all fields of science were not made by teams but by mavericks. Consider Einstein, for example. If he had been a member of a team he'd have been squelched. He'd have been told the first time he broached his idea that he was cock-eyed. Can you imagine Newton, Steinmetz, Ramsey, Darwin, Tesla, Pupin, Pasteur as members of research teams? Every outstanding research man I have met, and I have been fortunate enough to have met quite a few in my time, were all mavericks—every one of them. To try to tie such men up with budgets and requisitions and systems and organization procedures and team work and "togetherness" is utterly futile. The original thinker must work alone. Must be left alone.

Team-work is frequently necessary when it comes to applied science. I don't suppose we'd ever have had the atom bomb if it had not been for well organized team-work. But the leading light will always come from the mavericks. So if you are lucky enough to

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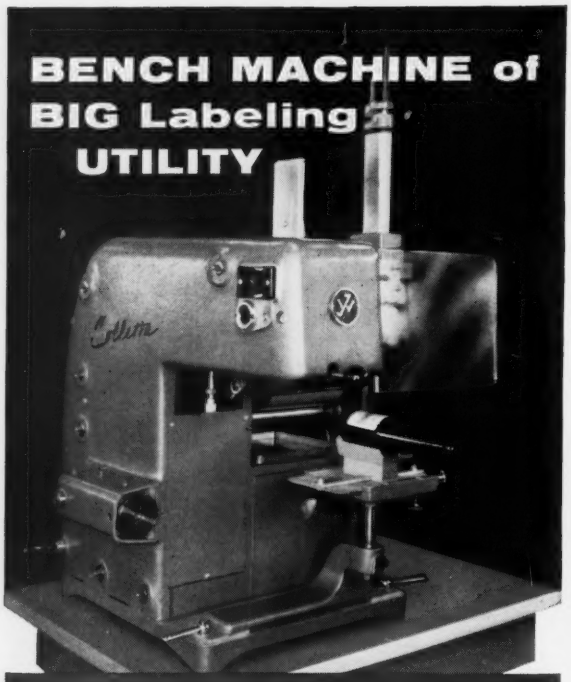

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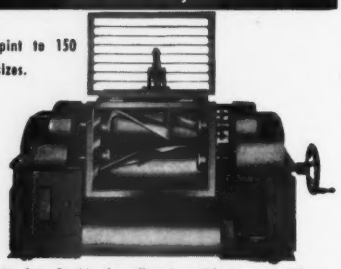
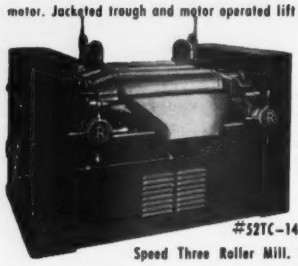


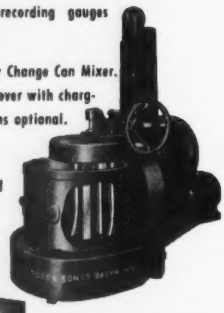
#41L–10 Gal. Double Arm Kneader with two speed brake motor. Jacketed trough and motor operated lift optional.



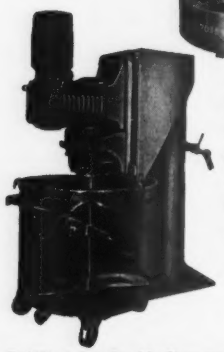
• 4½ x 10, 6 x 14, 9 x 24, 12 x 30, 14 x 32, 16 x 40" sizes.

#52TC–14" x 32" High Speed Three Roller Mill. Hydraulic adjustment and pressure recording gauges optional.

#30C–50 Gal. Heavy Duty Change Can Mixer. Adjustable outer scraper, cover with charging port, and gates on cans optional.



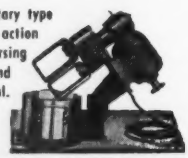
• 8, 16, 20, 50 and 60 gal. sizes.



#130H–250 Gal. Change Tank Mixer with hydraulic raising and lowering and variable speed motor. Various type stirrers and high speed impellers optional.

• 80,150 and 250 gal. sizes.

#130EL–1 Gal. Double Planetary type Change Can Mixer with shearing action stirrers, and variable speed reversing type motor. Jacketed cans and portable trucks for cans optional.



• 1, 2, 3, 4, 6, 15, 25, 50, 65, 85, 110 and 150 gal. sizes.

Also Dry Crushing and Pulverizing Mills, Hopper Mills, High Speed Dissolvers or Dispersers, and Mixers of all types for dry, liquid, paste, or heavy paste materials.

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have a genuine maverick in your organization, don't fire him, as most people do, because he is oblivious of all the snarls of red tape that bind everybody together in "togetherness"; give him a room or a lab somewhere and leave him alone.

Compressed Air Drying Equipment

A new line of drying equipment for compressed air or other gases has been announced by the Pittsburgh Lectrodryer Division of McGraw-Edison Company, 32nd St., Pittsburgh 30, Penna.

Planned particularly for instrument air service, BZ Lectrodryers are simple and functional in design. Parts are interchangeable, and the few moving parts are easily accessible, simplifying maintenance. Operation is completely automatic.

Working on a six-hour cycle, the unit adsorbs moisture, heats for regeneration, and cools with only the attention of occasional lubrication. Instrumentation permits checking the operation at a glance.

Multiple-Speed Electric Packer

Fairchild's, Incorporated, 4864 Eagle Rock Blvd., Los Angeles 41, Calif., has introduced a multiple-speed electric packer, Model 33, which is said to double the capacity of the present Model 27.

The new model will produce a minimum of 40 filled containers a minute, in counts of 100, of a product approximately the size of an aspirin, with other sizes and counts being more or less proportionate, at the minimum speed, which is one-third of the units potential. A vacuum unit is available to remove dust.

As with the Model 27, this model has two independently controlled vibrators, an adjustable-pitch table top, and a variable-speed drive.

The manufacturer is offering users of its Model 27 the opportunity to convert it to Model 33 with double the capacity, at a nominal charge.

New Duplex Filter

A new Duplex Filter has been added to its line of liquid handling equipment by the Ertel Engineering Corporation, 90 Front Street, Kingston, N. Y.

This new EFS Duplex Model permits single or double filtration in a single operation, and is therefore ideal in operations in which some liquids require both primary and polishing filtration and others require a single pass. It is available with either standard or sludge inlet frames.

The EFS Duplex Model has no rubber washers or gaskets. The filter medium forms a seal around the edges of the filter frames and prevents loss of liquid. The standard Ertel Single Handwheel effects a simple, complete closure. It can be furnished with or without pump, motor, and pressure control, and it can be furnished with an Ertel Stone Fibre Eliminator for pyrogen work.

Model EFS Duplex Filter is available in a number of sizes from 10 to 100, 12 in. x 12 in. filtering surfaces. Liquid contact parts can be either stainless steel or nickle-plated bronze.

Portable Liquid Filler

The National Instrument Company, 2701 Rockwood Ave., Baltimore 15, Md., has introduced a Filmatic Model DAB-16 Portable Liquid Filler, which fills containers up to 32 ounces in size. It utilizes two volumetric, 16-ounce capacity piston pumps operating in tandem. Each pump can be adjusted to dispense from 1½ to 16 ounces per stroke, thus filling containers up to 16 ounces in size, two at a time. Speed is adjustable from 3 to 30 per minute by means of an electronic variable-speed drive.

Especially suited to filling polyethylene, glass, or metal containers, the unit can be used for viscosities from water-thin to heavy oils and viscous resins. Set-up requires a few minutes only, and the entire pump assembly can be removed merely by loosening two thumb screws. Interchangeable pump units permit the DAB-16 to be used for dispensing liquid volumes as small as a single drop.

It may be used as a semi-automatic machine, or attached to a conveyor for automatic operation. Parts that touch liquid are of stainless steel and Teflon. Kel-F and glass pump assemblies are available.

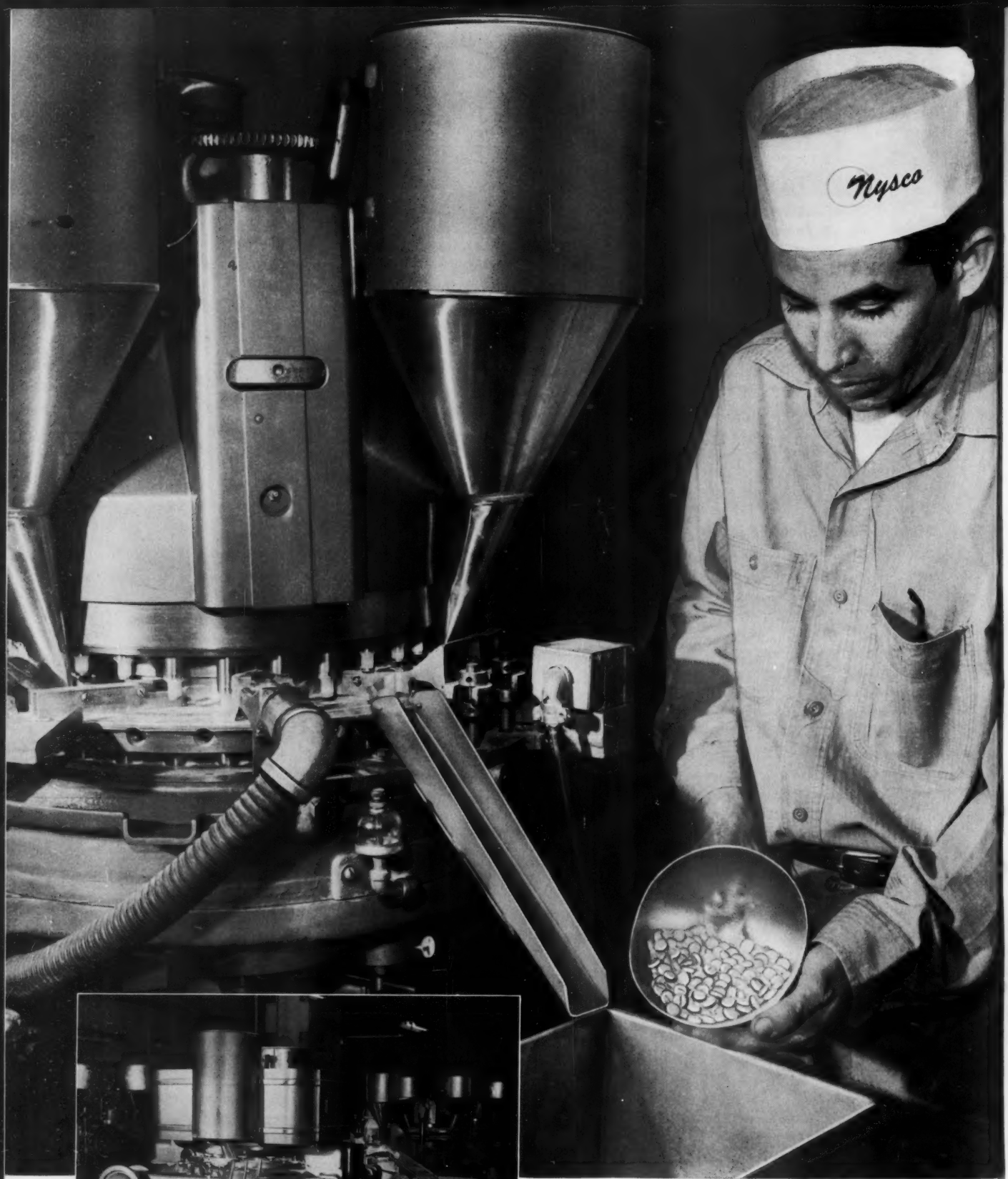
Hand-Feed Single-Valve Filler

A new, compact hand filler easily adapted to a broad range of liquid or viscous products has been introduced by the Elgin Manufacturing Company, 200 Brook Street, Elgin, Ill. An adaptation of the firm's single-valve filler, the machine features a single-revolution clutch, and is precision-designed for delivery of products in the food, paint, cosmetic, and oil industries. Covering a large range of container sizes up to 32 ounces, it can also be equipped with special cylinders and pistons for larger or smaller capacities.

Plants with low or moderate production or frequent change-over of products will find this machine versatile. Easy to clean, and occupying a minimum floor space of 24 x 36 inches, it is available with a reservoir or manifold feed. An agitator is available.

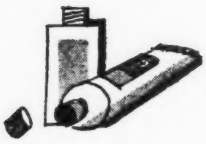
Elapsed-Time Controller

Weston Instruments Division of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J., has devised a new elapsed-time controller, which provides timed automatic regulation of either temperature or pressure when installed in the circuit of a batch-type operation. Model 7003 is available in types covering the complete range of Bourdon tube temperature and pressure instruments. Charts and ranges are available as low as minus 100° F. or 30 inches of mercury volume and as high as 1000° or 7500 psig. All classes of thermal systems are available and the control signal is pneumatic. The case is dust and moisture resistant.



▲ A multi-layer tabletting machine—Model 566—is used to form a three layer aspirin—TRIPISIN.

◀ Stokes Model 533 produces 900,000 throat lozenges during a ten hour working day.



Advancing Therapy

Psilocybine Halucinogen

Psilocybine, the phosphoric ester of 4-hydroxytryptamine, has been established as the active principle of the Mexican mushroom family *Psilocybe mexicana Heim.* This chemical is the only phosphorylated indole compound that is known to occur in nature and is remarkable in that it is an indole substituted at the fourth position.

It has low toxicity. Up to 200 mg. per kilogram of body weight injected intravenously in mice had no lethal effect. The absolute toxicity in terms of the LD_{50} could not be determined because of the limited supply of the drug.

Two publications report on the psychologic effects of psilocybine. Hofmann et al. reported that in man the effects of the mushroom and of psilocybine are alike. The oral administration of 4 to 8 mg. of psilocybine is followed, after about forty-five minutes, by a state of inebriation, with physical relaxation and clearly observed mental alterations. This state lasts for several hours and leaves no after effects. The symptoms vary in individuals and are somewhat similar to those of mescaline and lysergic acid diethylamide (LSD).

Delay et al. administered 10 mg. of psilocybine sublingually to 4 normal subjects and 14 mentally ill patients. According to the summary heading this report, psilocybine caused hallucinations, dreamlike states, reliving of emotionally charged experiences and modifications of mood. These manifestations varied from subject to subject. The name "psychodysleptic" was suggested for the action of this type of psychotropic drug.

Psilocybine is an active chemical that, like LSD and mescaline, has psychotogenic effects. Regarding the dose needed to bring about observable effects in adult human beings the order is as follows: LSD, 70 microgm.; mescaline, 500,000 microgm.; and psilocybine, 5000 to 10,-1000 microgm. Experiments by M. Rinkel et al (*N. E. J. Med.* 262: 295, 1960) with psilocybine did not produce true hallucinations in 8 normal subjects. Many pertinent factors do materially influence the course and outcome of such experiments: the personality and attitudes of the observer; the rather artificial setting of the experiment (in contrast to the native's accustomed environment and ceremonies); the lighting and climatic condition of the experimental setting (air conditioned, temperature, humidity); the dosage and route of administration; the purity of the product (it has been argued that the impurities of the natural plant may account for the dramatic effects reported by explorers); the time and duration of observation; the emotional state and expectancy of the subject before administration of the drug; previous drug experiences; and the personality pattern and motives of the subjects who undergo the experiment.

Aspirin Absorption

P. Sleight (*The Lancet*, 1960, p. 305) studied the speed of absorption of aspirin in normal subjects free from gastrointestinal disease, under strictly controlled conditions. Each subject was given aspirin, soluble aspirin (calcium aspirin), and two propriety preparations—acetylsalicylic acid with aluminum carbonate and magnesium carbonate, and acetylsalicylic acid plus glycine. In a double blind series, the preparations were given in random order to six healthy volunteers who had not taken any salicylate in the previous 72 hours. Blood samples were taken at 0, 10, 20, and 30 minutes after taking the 10 grain dose and serum salicylate levels were determined.

Serum salicylate levels were about the same for the two buffered aspirins and soluble aspirin, but were much much lower with untreated aspirin. The author concludes that plain aspirin is roughly half as rapidly effective as soluble or buffered aspirins.

Comment: The author should have taken the trouble to read the label on his bottle of buffered aspirin; this would have told him that the buffer was aluminum glycinate and magnesium carbonate, not aluminum carbonate and magnesium carbonate. Furthermore, although there is no reason to doubt the validity of this work, it would have been perhaps more persuasive if the author had shown some comprehension of the meaning of statistical technique. The various preparations should have been given randomly, as they were, to reduce the effect of individual physiological response; double blind administration was wholly unnecessary. The investigator and the subject should be kept unaware of the differences between preparations when a subjective effect is being checked; it is inconceivable that knowledge of the preparation or whether or not a placebo has been given can have any effect upon analytically determined blood levels.

Neomycin and Kanamycin Absorption

Serum levels and urinary recovery of neomycin and kanamycin were determined in patients by C. M. Kunin et al (*N. E. J. Med.* 262: 380, 1960) with and without cirrhosis of the liver or renal disease, and in patients with severe renal disease uncomplicated by cirrhosis who received these antibiotics orally.

Patients without evidence of hepatic or renal disease had demonstrable levels of neomycin in the serum from one to eight hours after a dose of 4 gm. by mouth; the average peak level was 4.0 microgm. per milliliter and was noted at one hour.

In similar patients after a single oral dose of 2.8 gm. of neomycin or 4 gm. of kanamycin (each as base equivalent but given as sulfate), an average of 0.6 or 0.7 per cent of the dose, respectively, is recovered from the urine in twenty-four hours.

In patients with cirrhosis of the liver and normal renal function receiving 8 gm. per day of drug by mouth serum levels of neomycin or kanamycin ranged from indeterminate to 8 or 9 microgm. per milliliter.

In patients with cirrhosis of the liver and azotemia receiving 8 gm. per day of drug by mouth the serum levels were generally higher than in those without renal failure, and, in those receiving neomycin, serum levels comparable to those seen in normal persons after parenteral therapy were achieved in some cases.

Actually, since the total amount absorbed is small, it may take a long time, or the severity of renal disease must be great before serum levels after oral therapy are in the range seen when the drugs are given parenterally. Nevertheless, since both these drugs, particularly neomycin, are nephrotoxic, it seems wise to avoid their use in uremic patients, when possible.

Bretylium Tosylate

Bretylium tosylate facilitates the management of hypertensive patients on long-term oral treatment according to C. T. Dollery et al (*The Lancet* 1960 p. 296) because of the low incidence of side-effects. The best results were obtained in hypertensive patients without retinal hemorrhage, exudates, or papilledema, and in this group 75 per cent showed a satisfactory response. Only 41 per cent of the patients with retinitis or papilledema were satisfactorily managed. The malignant hypertensive patients who had been difficult to manage with pempidine or mecamylamine usually proved insensitive to oral bretylium in the doses in this trial.

Irregular and incomplete absorption after oral administration probably contributed to the variable falls of pressure in some patients. Such unpredictable falls of blood-pressure are dangerous in patients with occlusive vascular disease of the brain or heart.

Enol Steroids

A. Ercoli and R. Gardi (*J.A.C.S.* 82: 747, 1959) made a large number of 3-enol ethers of steroid hormones and found that physiological activity was markedly affected. Ethers of androstenedione and testosterone, administered subcutaneously, showed no androgenic or myotrophic activity, but retained their antimammary cancer activity experimentally and clinically. The hormonal activity of methyl testosterone, 19-nortestosterone, cortisone, hydrocortisone, progesterone, and 17-acetoxyprogesterone as enol ethers were reduced on subcutaneous administration but were enhanced orally. The cyclohexyl enol ether of methyl testosterone, given orally, showed 5 times as great myotrophic and androgenic activity as the parent compound, or about the same as testosterone propionate parenterally. The propyl enol ether of cortisone acetate was as active as an anti-inflammatory agent as prednisone. Progesterone activity in the Clauberg test was increased by a factor of 10, without corresponding increase of the narcotic response, in the cyclopentyl enol ether. In the ethers, the oral activity generally increased to a maximum in the 7 carbon chain.

Streptimidone Antibiotic

The chemistry of streptimidone, 3-(2-hydroxy-7-methyl-5-methylene-4-oxo-6-nonenyl) glutarimide ($C_{16}H_{23}NO_4$), has ben reported by Frohardt et al. This new antibiotic was obtained from culture filtrates of the organism P-D 04998, which one may refer to as *Streptomyces rimosus* forma *paromomycinus*. Streptimidone crystallizes from an acetone-isopropyl ether solution as fine colorless needles. It is soluble in methanol, ethanol, acetone, ethyl acetate, and chloroform; slightly soluble in water and ethyl ether; and insoluble in petroleum ether. Crystalline streptimidone gradually deteriorates at 5 C., and at room temperature in sunlight it becomes yellow and oily after two weeks.

Streptimidone possesses marked inhibitory activity for certain fungi by D. L. Kohberger et al (*Antibiotics and Chemother.* 10: 9, 1960). Its fungistatic activity was determined in vitro against 59 strains of phycomycetes, ascomycetes, basidiomycetes, deuteromycetes, and actinomycetes. Growth of 28 strains was completely inhibited by 25 μg./ml. Among these, six species of the endomycetaceae, *Saccharomyces acidifaciens*, *Saccharomyces italicus*, *Saccharomyces logos*, *Saccharomyces rosei*, *Saccharomyces uvarum*, and *Schizosaccharomyces octosporus*, and one species of the pseudosaccharomycetaceae, *Kloeckera africana*, were inhibited by less than 1 μg./ml. The most sensitive species among the fungi tested was *S. uvarum*. *Cryptococcus neoformans* was the only highly virulent human pathogen tested that proved to be sensitive to the antibiotic.

Streptimidone also possesses noteworthy antiprotozoal activity. In vitro tests, showed it to be lethal for *Entamoeba histolytica* at a concentration of 8μg./ml. and to destroy more than 90 per cent of the organisms at a concentration of 0.5 μg./ml. The antibiotic, therefore, is as active as emetine, which was tested in parallel as a reference drug. When administered orally in tests against experimentally induced intestinal amebiasis in rats and dogs, streptimidone showed a degree of activity comparable with its potency in vitro. Therapeutic effects were observed in rats after it was given either in the diet or by gavage, but owing to high toxicity with either regimen, its therapeutic index was low. Doses of 5 mg./Kg./day, administered orally for 10 days, usually cured severe amebic dysentery in dogs without evidence of toxic side effects. Many antibiotics, including most of those that have received attention in the therapy of amebiasis, have been examined similarly; comparison of these data with the present result show streptimidone to be one of the most potent antibiotics against amebae.

When tested for 48 hours in CPLM medium, streptimidone inhibited the growth of *Trichomonas vaginalis*, in concentrations of 12.5 μg./ml., but failed to kill all organisms in concentrations as high as 200 μg./ml. It was ineffective under the same conditions against *Trichomonas foetus*.

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Perfumer's Shelf

Taste

Taste, like smell, is classified as a chemical sense because of its dependence on specific chemical bodies for it to be brought into use. Also like smell, there are no absolute units of measurement: the taste of a substance is very closely linked with the aroma. This can be very easily demonstrated by closing the nostrils and carrying out tasting trials such as eating an onion and fruit.

It has been established that there are four fundamental tastes, sweet, sour (acid), salt (saline) and bitter. Dyson regards pungency as an independent taste but this is probably better regarded as an auxiliary sensation which is part of the aroma complex.

The organs which are affected and which convey the sensations to the brain are small organs mainly situated on the tongue and known as taste buds. They were discovered by Loven and Schwabe in 1867 and resemble a flower bud, hence their name. About nine thousand of these are estimated to be present in man. In the interior of the taste bud are elongated cells ending in a small hair-like process known as the gustatory hair which reaches the surface through a small pore, the gustatory pore. The set-up of the taste organs resembles those used for olfaction very closely indeed. They are not all on the tongue and what are on the tongue are not evenly distributed there, the area varying with each fundamental unit of the four primary tastes. For example the tip of the tongue is most sensitive to sweet substances and the base the least sensitive. It is recognized that the sour taste is most easily sensed at the side of the tongue, the bitter in the middle, the sweet at the top, and the salt between the sour and the sweet.

A distinction is generally drawn between the taste and flavor of a substance. Flavor is usually taken to mean the association of smell, touch, temperature with one or more of the four primary taste sensations.

This is a point that is not generally taken sufficiently into account when assessment of flavors is carried out. One often meets samples of essences in the concentrated state which are very near reproductions of the aromas of the fruit, but in the diluted state at the concentration at which they occur in the final product the resemblance to the natural body is not so apparent. Again the same essence tried out in simple syrup, acidified syrup, fondant, boiled sweets, in the presence of preservatives and pectin, and tannins will appear to be quite different in its effect on the taste buds.

It is very necessary therefore in matching essences or in trying to imitate a natural flavor that it be tried out under the same conditions. Much of the non-success of essences compounded to simulate the flavors of soft fruits such as strawberry, apricot, melon, etc., may be due to the fact that the natural flavor is appreciated in the presence of organic and mineral matter in a medium of a definite acidity and that compounded flavors are seldom tried out under the same conditions.

Another external influence that can play a part in the assessment of flavors is that of color. Tests have been carried out when the same flavor was incorporated into a medium which was colored with different colors such as flavoring a red jelly with lemon essence and flavoring a yellow jelly with raspberry or strawberry essence. Similar tests were made with cachou when rose flavor was incorporated in a violet colored cachou, and violet flavor in a rose colored cachou. It was very striking to see the psychological influence that the color had on the identification of the flavor.

There is no means of measuring taste in absolute units; since taste is tied up so intimately with the aroma, until a satisfactory theory of odor and its related phenomena is put forward, nothing much can be done in the field of taste.
—*P. & E.O.R.* 51: 1, 1960.

Ambergris

Genuine ambergris occupies a special niche among the few odorants of animal origin which have attained an assured position in perfumery due to the peculiarity of their scents and their magic power of reactivating compositions persistently and spontaneously according to K. Bergwein (*Dragoco Report* 7: 19, 1960). It has been prized for centuries as the most delicious aromatic substance of all the odorant drugs of animal provenance, yet its source and origin were enveloped in mysterious obscurity for a long time.

Although ambergris was an important article of trade in northwest Africa even earlier than the year 1000 A.D., details concerning the origin of the drug and its industrial application were not known until around the beginning of the 18th century.

Today, ambergris is known to be a pathological excretion which has been found in the intestine of sick or dead sperm whales (cachalot), *Physeter macrocephalus*. In view of the high content of various sterols, it is assumed that certain pathological processes in the gall bladder (together with pathological processes in the intestine) cause the development of ambergris in the body of the sperm whale. Ambergris is lighter than water, and it is found floating on the surface of the sea. Its density is about 0.900. It has been found in areas such as the Asiatic coast of the Pacific, the Persian Gulf, and the

coasts of Arabia. It is also fished up in nets—allegedly after storms—in regions around Madagascar, Surinam, Java and Japan. Ambergris which has drifted about on the seas or has lain on a beach for many years is considered to be particularly valuable, as is fossil ambergris which is often centuries old.

Soft black ambergris is practically useless in fine perfumery. The gray and white varieties are the most sought after and the most highly valued. Medium hard ambergris, which is dark gray to black in color, is only half as valuable as gray or white ambergris.

Opinions on the smell of ambergris diverge greatly. Only soft black ambergris has an unpleasant feces-like smell. The smell of the gray or white quality does not resemble that of feces, and the "animal" scent is also very faint. Good ambergris brings to mind the scent of an ocean beach, of sea-weed under sunshine. The balsamic note is reminiscent of incense, and, in addition, there is a perceptible odor of wood, moist earth and a tobacco note. A musk-type scent of varying strength is conspicuous in the undertone. Gray ambergris exudes a warm pleasant perfume note.

The high price of ambergris may easily induce a perfumer to dispense with it, all the more so since the 3 per cent tincture of ambergris generally used developes the full odor only after being stored for at least one year. It is true that the amount of odorous and volatile parts contained in normal ambergris is less than 1 per cent. However, ambergris contains 25—45 per cent of odorless ambreine which is steadily split up into highly odorous parts due to oxidation by atmospheric oxygen. The aging of tincture of ambergris consists of this slow oxidation of the dissolved ambreine, in consequence of which the perfume effect and quality of the tincture of ambergris is steadily improved.

The tinctures, as genuine fixatives and compensating odoriphores, play a special part in fine perfumery: their contributions are important to the soft delicate initial odor of a perfume, the harmonious, living warmth of its emanation, and the persistent scent effect.

Green Notes

According to a note in "Dragoco Reports" the number of available green substances with pleasant and effective olfactory qualities is decidedly small, and a good green odor is almost a rarity. Just as any modification of a top note requires a great deal of skill and delicacy, it is relatively difficult to incorporate these odorants in some compositions. Apart from modification of the top note, the aim is often to impart an "exquisite" green note, one which persists and enlivens the perfume evenly during every stage of dispersion of the scent.

Green odors are not all-round odorants which can be used in a wide basis, for every substance has its own individual note with a consequently limited range of application. This means that only one specific green type is, in each case, suitable for the individual compositions. This narrow range can be expanded considerably by skillful composition technique. Particularly original and inimitable perfume creations are sometimes wrought in this way.

The range of application of green complexes such as Agrumenal, Corps Vert and Vertilal is comparatively broad, and they are much easier to incorporate in perfume compositions. Scent creations with distinct characters of their own can be obtained by use of such specialties. Surprisingly charming effects are achieved, for example, when these green substances are combined with flower oils or other pure flower bases. The newly-developed green notes make it possible to create novel types of scent which are agreeable to men. Moreover, certain green substances are indispensable in working out imitations that are true to nature (or very close to it) of many flower and fruit odors.

Classification of green odors may be roughly made along the following lines: Citrus green odors; Leaf green odors; Flower green odors (such as rose petals, lily-of-the-valley, lilac); Conifer green oodrs; Fruity green odors (cucumber, melon, berries); geranium green odors; Grassy green notes; herbaceous and spicy green notes; mossy green odors; violet green odors; general green notes.

Coconut Aldehyde

Aldehyde C-18 or coconut aldehyde is not an aldehyde and it contains not eighteen, but nine, carbon atoms according to M. S. Carpenter (*The Givaudanian*). Its proper name is gamma-nonalactone. One of the fragments obtained from the destructive distillation of castor oil is heptaldehyde (or oenanthol). When heptaldehyde is condensed with malonic acid, one or the other of two isomeric nonenoic acids is obtained, depending upon the conditions employed for the condensation. One of these acids, upon treatment with sulfuric acid, forms gamma-nonalactone.

As a family, the lactones are noteworthy for the fact that many of them are not only pleasantly odorous, but powerfully so. Ambrettolide and cyclopentadecanolide have potent musk-like odors, gamma-undecalactone has a peach-like odor. Gamma-nonalactone is no exception to this trait; it has an effusive, powerful, coconut-like odor. It is the only commercially available synthetic material which has such an odor. A few chemically similar lactones have been prepared in the laboratory and have been reported to exhibit coconut-like odors, but they are of no commercial interest because manufacturing costs would be prohibitive. The lactones have another family characteristic to which they all conform, without exception: they are relatively stable except in the presence of alkali. As inner esters they are subject to saponification, which forms the odorless alkali salt of the corresponding hydroxy acid. Thus their use is not recommended wherever alkaline conditions prevail.

In perfumery, gamma-nonalactone contributes a unique character to the strong and heavy floral types such as the gardenia and tuberose. It offers a challenge to the creative perfumer who is ever seeking new and different and intriguing nuances. As much as gamma-nonalactone is useful to the perfumer, it is well nigh indispensable to the flavorist. It is hard to conceive a coconut type flavor which does not contain a generous proportion of it. Other nut flavors, such as almond, are improved by its inclusion.

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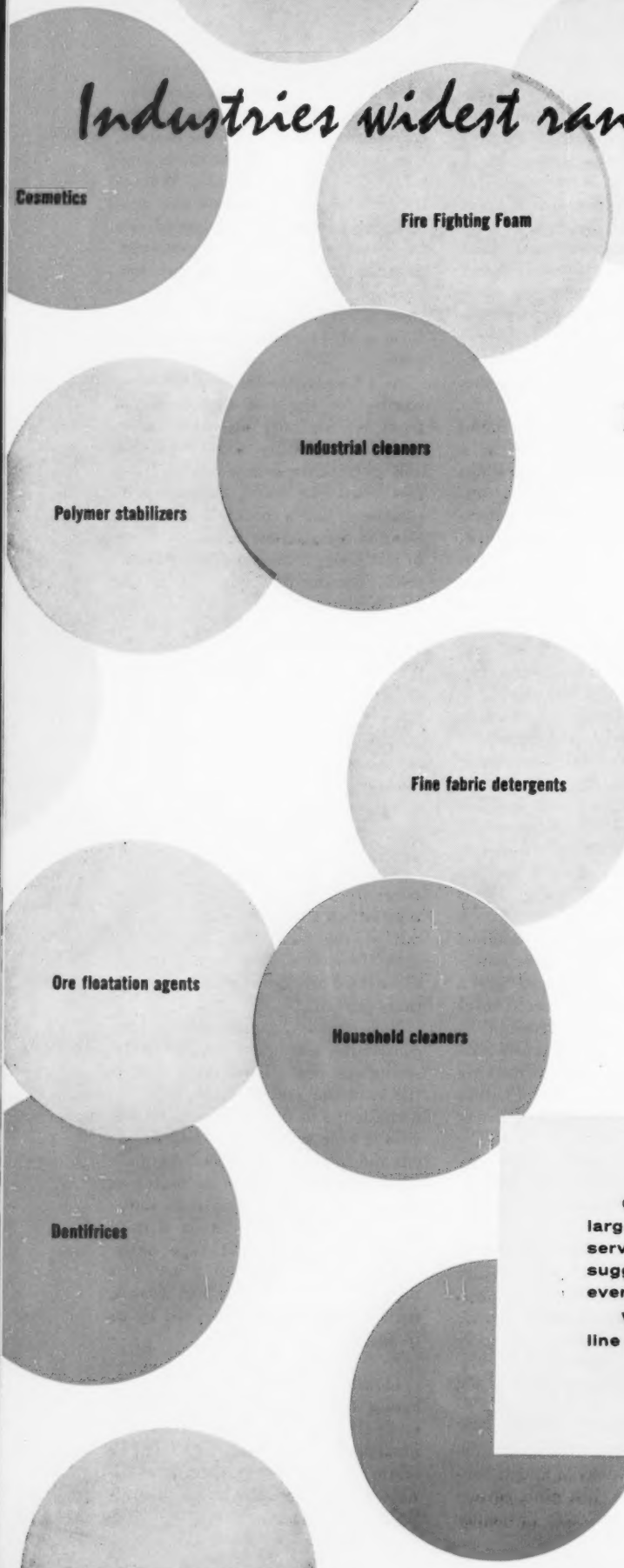

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Compounder's Corner

Cold Creams

The purpose of a cleansing cream is the removal of facial make-up, of surface grime and oil from the face and throat. Water-in-oil cosmetic emulsions bring about a greater degree of cleansing action than the opposite type, since the aqueous phase removes the residues of perspiration and water-soluble dirt, while the oil-phase, owing to its solvent properties, removes fatty excretions of the skin and previously applied cosmetics. A properly formulated cleansing cream is an ideal agent to perform the aforementioned function.

The properties required for a good cleansing cream are as follows:

1. It should be stable and have eye-appeal.
2. It should spread and slip easily without too much "drag."
3. It should have a refreshing effect on the skin.
4. It should not provoke any irritation of the skin.
5. It should not clog and obstruct the respiration of the skin, as such action is susceptible to provoke excessive perspiration.

Mineral oil of low viscosity is a good solvent of oils and greases that bind grime and make-up to the skin. The cleansing action of a cream is therefore related to its liquid oil content.

W/O emulsions of the "basic cold cream" type generally contain 50 per cent liquid mineral oil calculated on the total weight of the cream formula.

As a natural product beeswax distinguishes itself by its completeness as an emulsifying agent. In its constitution we find alcohol monoesters, higher fatty alcohols and higher paraffin hydrocarbons of microcrystallinic structure. The first two are excellent emulsifying agents and the latter are bodying agents. Beeswax also contains free wax acids which may be neutralized with the aid of borax and thus increase the dispersion capacity of the beeswax complex.

P. Mannheim (*S.P.C.* 32: 1225, 1959) prepared six formulas for comparison. The Galen type formulas consisted only of beeswax, olive oil, and water. Formula A contained 160 parts of beeswax, 500 parts of refined olive oil, and 340 parts of distilled water. In formula B, the beeswax is reduced 120 parts and the water correspondingly increased to 380; in formula C beeswax is further reduced to 80, water increased to 420. Formula D is made with 160 to 170 parts of beeswax, 500 parts of mineral oil, and 340 to 330 parts of water, while formula E also contains 7 parts of magnesium sulfate. Formula F is also like formula D, but with the addition of 10 parts of borax or triethanolamine.

The blending of the two phases took place at about 75°C. When during the stirring process, the temperature had dropped at 35°-40° C., the work of the planetary mixing machine was discontinued and the mass passed through a colloid mill. The emulsion obtained in the planetary mixing vessel is translucent and coarse but, after treatment by the colloid mill, changes into an opaque fine cream.

Preparations A and B were too firm and too close-textured, because of the overdose of beeswax in Formula C was considerably reduced, a stable cream of smooth consistency was obtained.

Under identical conditions mineral white oil may be emulsified more easily than olive oil (or other fixed oils and fats). Cold cream produced with mineral white oil exhibited a fine texture and eye appeal which could not be obtained when only fixed vegetable oils were employed.

Galen's ancient formula does not meet modern standards for emulsion stability because of a lack of homogenization and resistance to deterioration (rancidity of olive oil). However, from a purely functional standpoint the formula is almost as effective a cleansing or emollient cream as some of the present-day formulations.

Formula D. The oil phase was added to the aqueous phase at about 75° C. A slight foaming of the transparent and liquid mass was observed during the mixing. At 35°-40° C. the mass was subsequently treated in the colloid mill. The consistency remained in the meantime semi-liquid.

Only after 24 hours did the homogenized emulsion appear as a smooth, opaque and finely dispersed cream.

Formula E. This formula contains magnesium sulfate. The process was similar to that described immediately above. However, no foaming of the mass could now be noticed. The resulting cream had an attractive appearance and a much finer texture than that of Formula D.

Formula F. This formula is identical to the "basic cold cream." The dispersing capacity of the beeswax is increased by neutralization of the wax acids (cerotic acid) contained in natural beeswax, with the aid of borax. As may be expected, the emulsion immediately becomes milky white and opaque when the two phases are mixed together. The final emulsion, mixed and formed only in a planetary mixing equipment without homogenizing, appears as a smooth, finely dispersed cream of extraordinary stability.

From the cosmetic point of view the most valuable cream in my series is the one produced in accordance with Formula E. This is the prototype of a good cleansing cream. It agrees with any skin when applied to it and thus has good consumer acceptance. There are no complaints of the "sweating" of the skin of the face and neck even in hot and/or humid climatic conditions.

On the other hand, the cleansing or cold cream F will not meet with wide approval in hot countries. Its application to the skin might prove unbearable during many months of the year.

If Galen, during his lifetime, had had at his disposal besides beeswax also mineral white oil, magnesium sulphate and an homogenizing machine, he would have been able to present us with the cleansing cream *par excellence.*

Gordon Research Conferences

The Gordon Research Conferences for 1960 will be held from June 13 to September 2 at Colby Junior College, New London, New Hampshire; New Hampton School, New Hampton, New Hampshire; and Kimball Union Academy, Meriden, New Hampshire. The conferences are informal meetings consisting of scheduled lectures and discussion; since discussions are informal and publications do not emanate from the conference, discussions are often remarkably free and far ranging. Meetings are held mornings and evenings, with afternoons available for recreation or individual discussion. These meetings disseminate and often originate information and ideas to an extent not possible in usual channels of publication and presentation, and scientists are able to form personal associations not otherwise possible.

Requests for attendance at the conference, or additional information, should be addressed to W. George Parks, Director, Department of Chemistry, University of Rhode Island, Kingston, Rhode Island. From June 13 to September 2, 1960, mail should be addressed to Colby Junior College, New London, New Hampshire.

As examples of the nature and quality of the programs, these are given for the Conferences on Food and Nutrition and Steroids and Other Natural Products. The Food and Nutrition Conference, August 8 to 12, at Colby Junior College, will be under the Chairmanship of David B. Hand, with J. C. Bauernfeind as Vice Chairman. Papers are F. J. Butt, "The Use of Chelating Agents in Food Processing"; D. A. M. Mackay, "Characterization of Flavors by Gas Chromatography"; R. Thiessen, Jr., "Radioactive Tracers for Screening New Food Additives for Safety"; B. L. Oser, "The New Regulatory Control of Food Additives." W. N. Pearson, "Correlation of Biochemical Measurements with Other Parameters of Nutritional Status"; I. C. Plough, "Correlation of Clinical Observations with Nutritional Status"; D. M. Hegsted, "Interpretive Guides for Nutritional Appraisal"; D. F. Hollingsworth, "Dietary Survey Techniques and Interpretation." A. E. Harper, "Amino Acid Imbalance"; J. B. Longenecker, "Amino Acids in Blood Plasma as an Indication of Biological Value of Proteins"; M. Winitz, "Use of Water-Soluble, Chemically Defined Diets in Studies of Nonessential Amino Acids and in Vivo Metabolic Processes"; K. J. Carpenter, "Food Technology and the Availability of Dietary Amino Acids." R. E. Olson, "Evidence for the Prevention of Atherosclerosis in Man by Dietary Means"; G. V. Mann, "Lack of Evidence for the Prevention of Atherosclerosis in Man by Dietary Means"; B. S. Platt, "Experimental Production of Severe Protein Malnutrition." O. S. Privett, "Effect of Processing of the Properties of Dietary Fats"; J. G. Coniglio, "Nutritional and Metabolic Effects of Radiation."

The Steroid Conference, August 1 to 5, at New Hampton School, is under the Chairmanship of George Buchi. A. R. Battersby, "Researches on Alkaloid Biogenesis;" A. Brossi, "Total Synthesis of an Antibiotic"; E. J. Corey, "Recent Work on Terpenes"; T. G. Halsall, "Some Researches in Polyisoprenoid Chemistry"; O. Jeger, "Some Novel Transformations of Steroids"; H. Muxfeldt, "Syntheses in the Tetracycline Series"; R. Pappo, "The Chemistry of Some 18-Oxygenated Steroids Derived from Conessine; Pfizer Group, "Syntheses in the Corticosteroid Series"; H. Smith, "Some New Total Syntheses of Oestrone and Oestrone Analogs; B. Witkop, "Chemical Methods for the Cleavage and Modification of Peptides and Proteins"; H. Conroy, "The Structure of Echitamine." Additional papers will be presented by R. B. Woodward, G. Stork, and J. Meinwald.

Other programs will also be of interest to scientists in the fields of Drugs and Cosmetics.

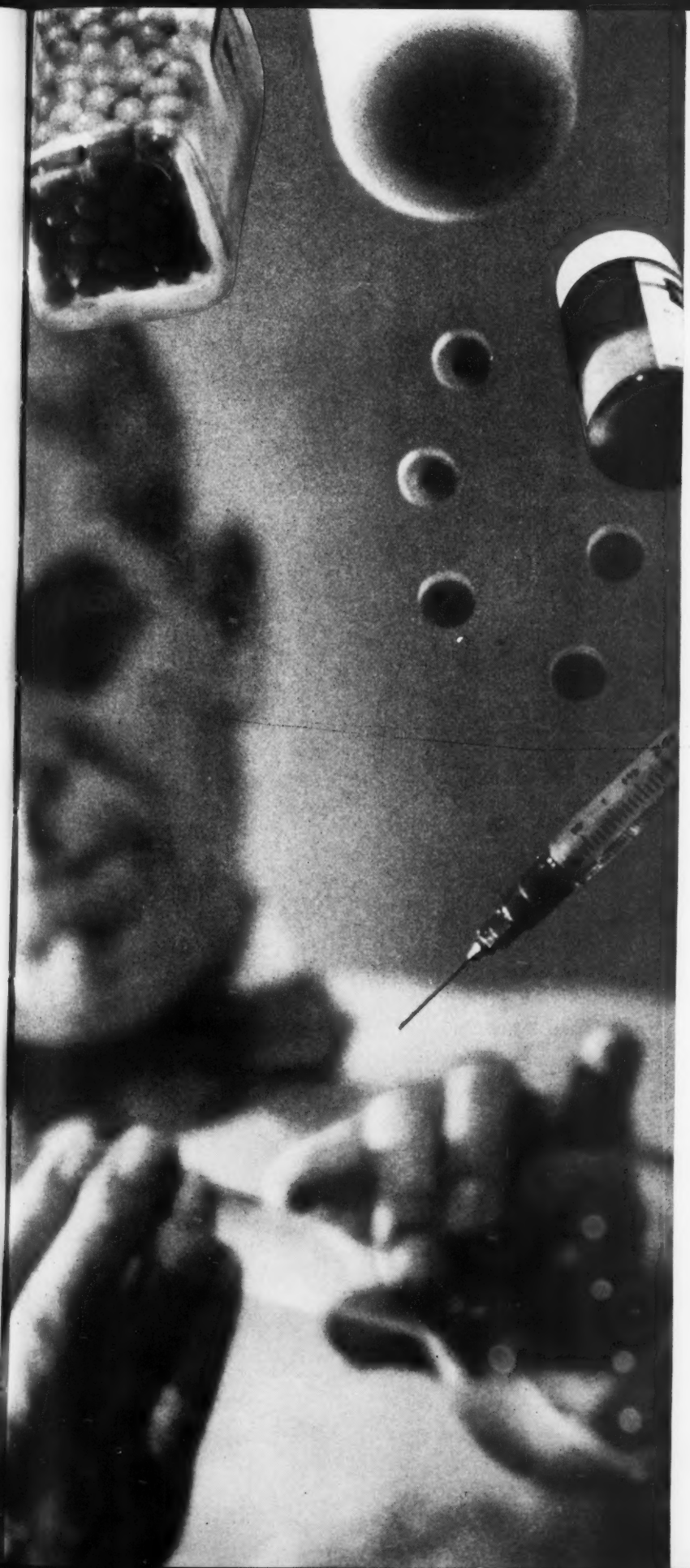
Dihydroxyacetone

The Wallerstein Company, Staten Island, N. Y., a division of Baxter Laboratories, Inc., announced a new fermentation process which makes dihydroxyacetone available for the first time in car-load quantities and allows a price reduction to $8.70 a pound. Plans are under way to develop uses for DHA as an intermediate in the manufacture of a wide range of products made by the chemical and drug industries. These include food emulsifiers, plasticizers, fungicides, alkyd resins and pharmaceuticals. The compound is the well-known active ingredient in a nationally distributed artificial suntan product.

The compound is a white, crystalline solid containing not less than 98 per cent of the compound. It is very soluble in water, alcohol, ether, and acetone and insoluble in hydrocarbons. It exists at first as a dimer in solution and is converted to the monomer on heating. The solid, kept in a cool, dry place shows very slight decomposition after several months.

Fatty Acid—Amine Soaps

Eighty-eight amine salts of long-chain fatty acids have been prepared, purified by solvent crystallization, and characterized by R. R. Mod, F. C. Magne, and E. L. Skan (*J. Amer. Oil Chem. Soc.* 36: 616, 1959). Forty-five of these were salts of palmitic acid. The rest included salts of capric, lauric, myristic, stearic, oleic, elaidic, and 12-hydroxystearic acids. A variety of aliphatic, aromatic, and heterocyclic amines, including primary, secondary, and tertiary amines, were investigated. The majority of these gave 1:1 acid-amine compounds on solvent recrystallization of an equimolar mixture of acid and amine. Some of the amines gave no crystallizable salt, and with others the pure salt could not not be obtained by this procedure. Under the same conditions the symmetrical alkyl, substituted alkyl, and aralkyl secondary amines investigated gave crystallizable compounds containing two molecules of fatty acid to one of amine. Molecular compounds of 2-aminopyridine with four molecules of saturated fatty acid were formed by recrystallization starting with a 1 to 4 amine-acid mixture. Surface-tension measurements were made for aqueous solutions of a few of the amine salts



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Trade Literature

Aromatic Chemicals

Polak & Schwartz International N. V., Division of International Flavors and Fragrances Inc., 521 West 57th St., N. Y. C. 19, has issued a price list of its aromatic chemicals, Aromatic Chemicals 1960 NR 1, in 12 pages.

Vancide

R. T. Vanderbilt Company, 230 Park Ave., N. Y. C. 17, has described its product Vancide in an 8-page technical bulletin, which provides several possible formulas, as well as the properties of the bactericide-fungicide.

Ketones and Pyridines

Union Carbide Chemicals Company, 30 East 42nd St., N. Y. C. 17, has published two booklets, one of 48 pages titled, Ketones, which describes 15 ketones and diketones available from the firm in commercial quantities. The second, Pyridines and Piperazines, describes in 20 pages the properties and uses of these intermediates. Both booklets contain extensive information on properties and specifications, as well as bibliographical references.

Flavors

Polak's Frutal Works, Middletown, N. Y., has issued a 32-page flavor list, which includes a section on pharmaceutical flavorings—both liquid and Flav-O-Locked dry flavorings—as well as formulas, charts, and processing information.

Resin Coatings and Binders

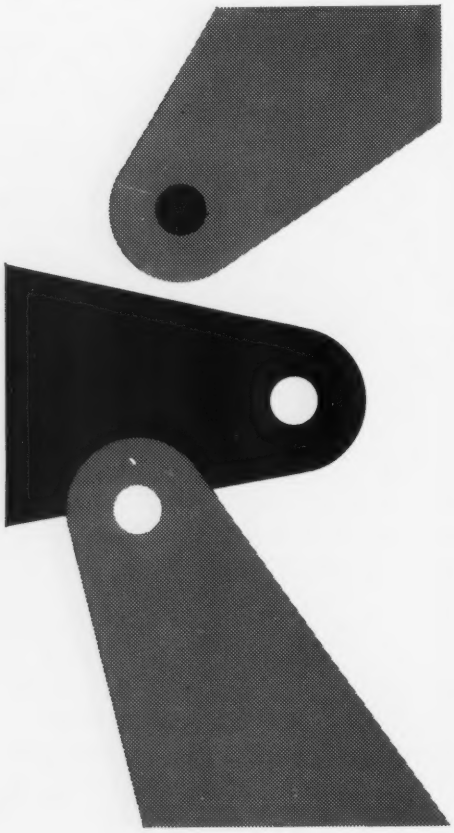
A comprehensive technical bulletin on the use of Gelva C-3, polyvinyl acetate, resins and Gelvatol, polyvinyl alcohol, resins as tablet coatings and granulating agents, has been issued by Shawinigan Resins Corporation, Springfield 2, Mass. Sections on the use of resins in film and enteric coatings, antioxidant coatings, and tablet binders are included.

Aromatics

A 12-page price listing of its aromatic chemicals has been published by Verona Aromatics, 26 Verona Ave., Newark 4, N. J. Specialties are included. Verona is the United States distributor for Haarmann & Reimer, Holzminden, Germany, which has recently put out a brochure, Haarmann und Reimer Heute, describing the company and its place in the history of the development of aromatics. Printed in three colors, this is written in English.

Morningstar-Paisley Booklet

An eight-page illustrated booklet, Morningstar-Paisley Has Already Touched Your Life Several Times Today, has been issued by Morningstar-Paisley, Inc., 630 West 51st Street, N. Y. C. 19. It lists industries and manufactured goods in which the company's products are used, gives the origin of the raw materials, and offers concise descriptions of the processed products available.



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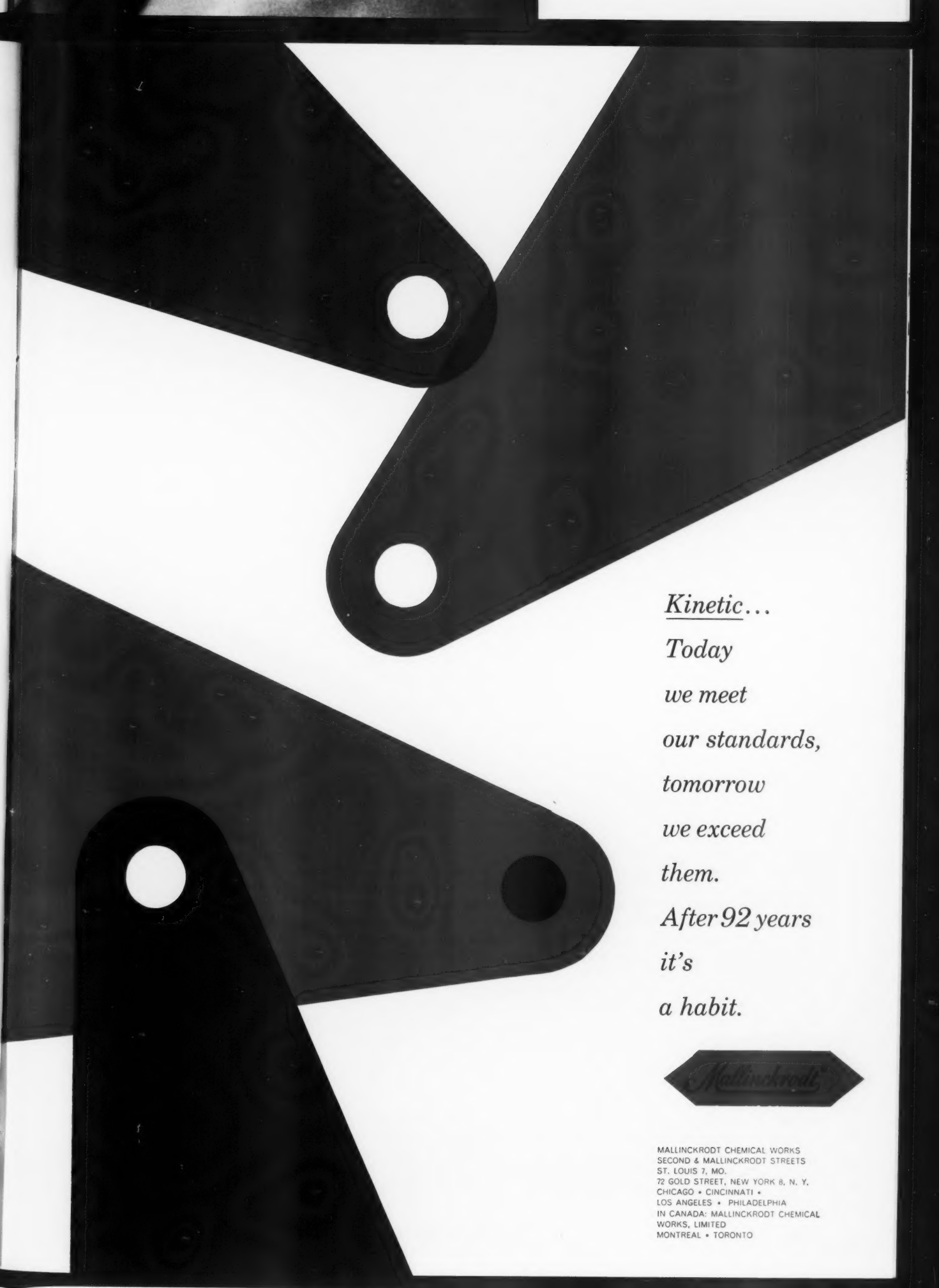

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Industry's Books . . .

Perfumes, Cosmetics and Soaps (with Special Reference to Synthetics,) *by Wlliam A. Poucher, F.P.S., F.R.P.S., Volume One, Sixth Edition, 463 pp., Illus., D. Van Nostrand Co., Inc., New York (1959), cloth,* **$12.50.**

The perfumery industry never lags in its desire for information of the latest and most secret developments in technique. This, Volume I—originally published in 1923—has been brought up to date and will generally be accepted all over the world as a standard work of reference. This first volume deals exclusively with raw materials for the whole industry, their sources, methods of production and purification, in the case of chemical bodies, their synthesis with formulas and physical constants. The best method of utilizing them is clearly defined by the author, and in several instances he gives formulas for their employment. Although the intervening period since the publication of the last edition has revealed a striking paucity in the discovery and production of really new aromatic raw materials, this sixth edition has had a careful revision and will undoubtedly be widely welcomed.

Perfumes, Cosmetics And Soaps (with special reference to synthetics) *by William A. Poucher, F.P.S., F.R.P.S., Volume Two, Seventh Ed., Illus., 453 pp., D. Van Nostrand Co., Inc., (1959), cloth,* **$12.50.**

This second volume of the three-volume set is devoted entirely to perfumes of all types, and this new seventh edition is noteworthy for its inclusion of a new classification of odors, based upon the volatility, or duration of evaporation, of a wide range of aromatics. This classification imparts a new aspect to the problem of fixation, in that it will now be more correct to classify these long-lasting substances as bases; for most of them have powerful as well as persistent odors, and combinations of them frequently determine the characteristic note of the perfume. Moreover, the author's mathematical system of blending any two chosen straight synthetics or compounds is worthy of careful study, and the novel fragrances that may result from the balanced admixture of relatively simple substances will surprise research workers. All the perfume and soap monographs have been revised in the light of this original investigation, and the modern formulas appended to each should facilitate the creative work of the perfumer.

Pharmacology And Therapeutics, *by Arthur Grollman, Ph.D., M.D., Lecturer and Professor in Pharmacology and Toxicology, Fourth Edition, Illus., Lea & Febiger, Phila. (1960), 1079 pp., cloth,* **$12.50.**

For the Fourth Edition of this work, the text has been brought up to date by the inclusion of all drugs introduced during the past two years. Many sections have been rewritten, including those on corticosteroid therapy and the treatment of cancer. These two sections, and the chapters covering the present-day use and understanding of tranquilizers, psychic energizers, the newer hormones, and the like, are presented in such a rational and scientific manner as to make them unique in a pharmaceutical text. Numerous new illustrations have been added. Every official drug currently in use is included in this book.

Physical Pharmacy, (Physical Chemical Principles in Pharmaceutical Science), *by Alfred N. Martin, Ph.D., Professor of Physical Pharmacy, Purdue University, 692 pp., Illus., Lea & Febiger, Phila. (1960), cloth,* **$15.**

This is a textbook for students in undergraduate courses that include the physical chemical principles of pharmacy. It shows how these principles can be made meaningful to average upperclass students and how theory can be applied to pharmaceutical compounding and product development. Dr. Martin's clear style will help students familiarize themselves quickly with apparatus and methods of measurement in determining physical and chemical properties of medicinal agents and dosage forms. At the same time, readers are introduced to methods of scientific experimentation which become a background for improved compounding techniques and the design of new products. Among numerous features are worked examples, problems with answers, and summary tables of pertinent pharmaceutical data not previously gathered together in a pharmacy book.

New And Nonofficial Drugs *(1960), 768 pp., J. B. Lippincott Co., Phila., cloth,* **$3.35.**

This is an annual publication of the Council on Drugs of the American Medical Association (A.M.A.), containing descriptions of drugs evaluated on the basis of available laboratory and clinical evidence. Its scope comprises agents proposed for use in or on the human body for the diagnosis, prevention or treatment of disease, whether or not their usefulness has been definitely established. Descriptions are limited to those individual drugs generally available in the United States that have not been included in the Pharmacopoeia of the United States, The National Formulary, or New and Nonofficial Drugs, for 20 years.

Pharmacy, *by Earl P. Guth, Ph.D., Professor of Pharmacy, Ohio State University, 24 pp., paper, Bellman Publishing Co., Cambridge, Mass.,* **$1.**

This is one of a series of monographs in the vocational and professional Monograph Series. They are used in connection with guidance activities wherever general counseling work is conducted and for individual reference purposes in the choice of a career. This one includes: history of the occupation or industry; qualifications for employment; training required; methods of entry; opportunities for advancement; earnings; general trends in the occupation or industry; further sources.

Veterinary Drugs In Current Use, *by Rudolph Seiden, D.Sc., Consultant on Veterinary Pharmaceuticals, 128 pp., Springer Publishing Company, Inc., New York, paper binding,* **$2.25.**

A multitude of facts and figures is condensed into this "pocket Book" which presents in alphabetical order the drugs—synthetic and natural pharmaceutical agents—used in the prevention and control of diseases of farm animals, including poultry, as well as of dogs and cats. The book is designed for quick reference by those who have the right to prepare or sell or use these drugs.

(*Continued from page 335*)

or even an improvement of the product's texture for smooth taste.

IMITATION FRUIT FLAVOR

Neutral Base

Iso amyl acetate
Ethyl acetate
Ethyl butyrate
Iso amyl butyrate

Primer

Allyl caproate (pineapple)
Benzaldehyde (cherry)
Citral (lemon)
Ethyl methyl phenyl glycidate (strawberry)

Toner

Tolyl aldehyde (cherry)
Ethyl caproate (grape)

Traces

Acetaldehyde (grape)
Ethyl p-tolyl glycidate (cherry)

Acids

Acetic (grape)
Butyric (strawberry)
Lactic (strawberry)
Caproic (pineapple)

Naturalizer

Essential oils
Botanical extractives
Fruit extractives
Animal extractives

Color

U. S. certified
Vegetable
Botanical

Solvent

Glycerine
Propylene glycol
Alcohol
Water
Syrup
Butyl stearate
Benzyl alcohol

The following outlines indicate the physical data that must be considered when flavoring a pharmaceutical, and include a few suggested flavors usually recommended as suitable for specific purposes.

PHARMACEUTICAL FLAVOR SELECTION

Required Physical Data

1. Suggested age group
   (a) Children: fruity or candy flavor
   (b) Middle age: vanilla, citrus, spice
   (c) Old age: grape, mint, licorice, wine
2. Form for intended use
   (a) Liquid or emulsion, spray-dried, tablet, capsule, salve, etc.
   (b) Solvent or carrier
   (c) Composition: aldehyde, ester, etc.
   (d) pH (acid or alkaline)
   (e) Dilution factor or dosage
3. Odor or taste to be masked
   (a) Taste: salt, bitter, sweet, acid
   (b) Odor: foul, sweet, phenolic, etc.
   (c) Dietetic considerations
4. Color (psychological effect)

PHARMACEUTICAL FLAVOR SELECTION PROCEDURE

1. Physical Flavor Form (carrier)
   (a) Alcoholic extract
   (b) Non-alcoholic flavor
   (c) Emulsion
   (d) Powdered flavor
2. Flavor Selection (basic taste)
   (a) Salt: butterscotch, maple, etc.
   (b) Bitter: wild cherry, walnut, chocolate, mint combinations
   (c) Sweet: fruit and berry flavors, vanilla
   (d) Acid: citrus flavors
3. Product Adjustments for Flavor (if possible)
   (a) Color: match flavor
   (b) Texture: mouth feel, mono-sodium glutamate, pectins, gums
   (c) pH adjustment
   (d) Solubility factors
   (e) Sweetening agents
   (f) Desensitizing agent methol

There was a time when the neighborhood pharmacist offered an occasional treat along with the treatment, at the suggestion of the family physician, by adding a dash of cherry, anise, peppermint, or sassafras. This procedure was never uniform regarding flavor strength, and specific flavor patterns developed, for example, using cherry in cough syrups, sassafras in castor oil, and peppermint in sedatives. The modern flavorist has upset the ancient flavor patterns; cough syrups, laxatives, and sedatives can now have a varied selection of flavorings with assurance of physical and chemical stability.

The development of techniques for spray-drying a variety of flavoring compounds has made it possible to flavor products in which excess liquid or stability was a difficult problem, for example, capsules, powders, or tablets.

The following is only a partial listing of pharmaceutical products successfully flavored, which in many instances have served to identify the item as to its taste "trade-mark."

Alkaloids
Amino acids
Aminopyrine
Ammonium preparations
Analgesics
Antacid preparations
Antibiotics
Antihistamines
Antipyretics
Antispasmodics
Aspirin
Barbiturates
Breath and mouth deodorants
Calcium preparations
Cough syrup/expectorants
Demulcents
Dental preparations
Dietary supplements
Geriatric preparations
Intestinal absorbants
Ipecac
Iron preparations
Laxatives
Lipid emulsions
Liver preparations
Medicated candies
Mephenesin preparations
Pediatric products
Sedatives
Sulfa preparations
Tonics
Tranquilizers
Vitamin preparations
Yeast preparations

There is actually no standard approach to flavoring a medicinal, since almost every product presents an individual problem with specific requirements for skillful custom flavoring utilizing all the available talents of a competent flavor laboratory staff.

FATTY ACIDS AND DERIVATIVES

(*Continued from page 331*)

regard to its method of manufacture. The term "triple-pressed" now includes products prepared by solvent crystallization, vacuum distillation, and pressing in combination with either procedure. The different crystalline types obtained are a function of processing techniques, and the effects of these forms are of considerable significance in cream consistency and fracture.[1] These chemical and physical differences carry over into the preparation of glyceryl monostearate and other fatty acid esters.

The case of the so-called "glyceryl monostearate" is further complicated because it consists of mono-, di-, and tri- esters of palmitic, stearic, oleic, and myristic acids, as well as 1.5 per cent free fatty acids and about 3.5 per cent glycerin. Hence, with four fatty acids in "triple-pressed" stearic and with three

(*Continued on page 398*)

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Skin Research

Oral and Topical Griseofulvin

Griseofulvin, a new antifungal antibiotic, was given orally to 84 patients and topically to 91 patients with a variety of ringworm infections by L. Goldman et al (*J. A.M.A.* 172:532, 1960). In adults the average oral dosage is 250 mg. three or four times daily, except in Trichophyton rubrum and Trichophyton gypseum (mentagrophytes) infections, which may require larger doses. Children generally respond to one-half of the adult dosage. Topical administration is still under study, especially in patients with tinea pedis.

Average duration of treatment varies from two to eight week in tinea capitis, tinea corporis, and tinea cruris; in infections located in areas of thicker skin, such as in palms and soles, somewhat longer treatment is necessary. Onychomycosis requires four to six months and even longer treatment in extensive and resistant cases and in toenail involvement.

Results are almost uniformly good, with eventual eradication of the infection, especially in tinea capitis where a complete cure may be obtained. One patient with tinea cruris due to T. rubrum relapsed each time the lesions cleared but is now under good control with topical griseofulvin therapy. Results in patients with tinea pedis are erratic. No serious side-effects were seen. Adverse reactions encountered were mild and transitory, consisting of a minimal number of cases of headache, gastric discomfort, nausea, dizziness, insomnia, anorexia, and fatigue. Patients with active peptic ulcer were given griseofulvin without untoward reactions. Little is known with regard to the compound's toxicity in long-term treatment. Before griseofulvin therapy is instituted, diagnosis of ringworm should be confirmed by direct microscopic examination and culture of scrapings from the involved areas, except in onychomycosis where this may be difficult to achieve. At present, this examination for fungi is best carried out by experienced medical mycology laboratories. At this time, griseofulvin appears to be an almost uniformly effective antifungal antibiotic in superficial ringworm infections, at least when given orally, and it is the treatment of choice in these conditions. There can be no doubt that this agent offers the first hope of consistent cures of these tineas.

The discouraging report by Grant-Peterkin that griseofulvin, in spite of its high effectiveness when given orally, is relatively ineffective as a topical antifungal agent and Pardo-Castello's report that topically given griseofulvin did not produce permanent fungicidal activity, presented a challenge to pursue further investigative studies with regard to this problem. A special griseofulvin lotion for topical application was prepared. This was an investigative material containing about 1.5% of griseofulvin suspension with surfactants, stabilizer, and urea in a glyceride oil. This investigative topical griseofulvin preparation was used on 91 patients with tinea capitis, corporis, cruris, and pedis due to T. rubrum, T. mentagrophytes, and M. audouini. Despite the relatively recent start of this study, the effected areas in a number of patients have cleared completely and many of the remainder are showing satisfactory improvement. Because of the discouraging results (relapses and vesicular reactions) of orally given griseofulvin treatment of tinea pedis, special griseofulvin mixtures are being given topically for this condition. Eczematous dermatitis developed in one patient in this series and results of a patch test to griseofulvin were negative. Detailed laboratory and clinical studies are being done with several other types of topically given griseofulvin lotions to attempt to define the value of the griseofulvin itself in such mixtures.

In uncontrolled experiments a number of patients with extensive tinea versicolor also have responded, at least temporarily, to topical administration of griseofulvin; control studies are now under way on the vehicle alone. While it is too early to reach definitive conclusions, these studies seem to indicate that the problem is one of achieving good diffusion into the keratin, rather than of simple percutaneous absorption, so that griseofulvin or its metabolites become available to the fungi. The lotion produces a mild drying of the skin. This desquamative response assists the action of locally deposited griseofulvin by more effective removal of the skin in the manner in which hair growth and nail growth remove fungi in keratin. Experiments are under way with bacterium - inhibiting and yeast-inhibiting compounds added to the lotion, since bacterial and yeast infections often occur concomitantly with fungus conditions, especially in intertriginous areas and on the feet. The authors are also studying the feasibility of concomitant oral, lower dosage, and topical therapy with griseofulvin.

Skin Penetration by Surfactants

From weak, unbuffered, mildly alkaline aqueous solutions, sodium laurate seems to be able to penetrate into the epidermis and dermis of excised human skin. From similar solutions, sodium dodecyl sulfate, on the other hand, appears to penetrate only in very small quantities below the barrier of normal undam-

aged skin and for the most part to be retained in the stratum corneum. When in quite alkaline, buffered solutions (pH > 10.5) both of these surfactants penetrate into the dermis. At this alkalinity the natural barrier is damaged.

The data presented in this paper by I. H. Blank and E. Gould (*J. Invest. Dermatol.* 33:327, 1959) are taken from single representative experiments. The conclusion should not be drawn that these data show the average amount of surfactant which may penetrate into the skin and reach the various layers. As might be expected, the amount of surfactant which penetrates varies from experiment to experiment. The variation is large and no average figure would be significant unless a large number of experiments were run.

From the data of comparable experiments (to be reported later), it can be seen that the sodium salts of alkyl sulfates other than dodecyl sulfate appear not to penetrate either from solutions of a pure chemical compound or from a solution of mixtures of alkyl sulfates of various chain lengths. The alkyl benzene surfactants, which represent another class of synthetic surfactants, have also failed to penetrate under experimental conditions similar to those described for the study of the alkyl sulfates.

The ability of proteins to combine with the anions of synthetic detergents has been reviewed in detail by Putnam; more recently Stupel and Szakall have discussed the pertinent data on the subject as they apply to the action of soaps and detergents on the skin. It seems reasonable to assume that the ability of the proteins of the stratum corneum to bind the alkyl sulfates and alkyl benzene sulfonates is at least one mechanism whereby the skin is able to prevent the penetration of these compounds.

A mechanism which is thought to be involved in penetration is the solubility of the penetrating substance in cutaneous lipides. At the pH of the cutaneous surface, some of the sodium laurate is converted to lauric acid. Lauric acid is only slightly ionized and might be expected to be soluble in cutaneous lipides, and it may, therefore, be the un-ionized lauric acid which penetrates into the skin from aqueous solutions of sodium laurate. Dodecyl sulfate, on the other hand, functions as a strong acid and is more highly dissociated.

Freezing-Point of Skin

Human skin freezes between −0.53° and −0.65°C., a temperature notably higher than the −2.2°C. formerly reported.

This true freezing point of human skin tissue was determined by W. R. Keatinge, and P. Cannon (*The Lancet* : 1960, p. 11, 1960). They point out that although various estimates previously had been published, "no previous determination of the true freezing point of human skin appears to have been made."

The British investigators conducted a study using the little fingers of healthy men and women aged 18-38. In most cases a rubber tourniquet was applied to the base of the finger to arrest the circulation. After precooling the finger in a mixture of ice and water until the temperature fell to near 0°C., the distal phalanx was immersed in a freezing mixture of brine and ice. All fingers were removed from the brine after 7 minutes, "and at the end of this time they felt and sounded hard when tapped with a piece of wood."

In all experimental subjects the fingers started to freeze within 2 minutes of immersion. However, there was always a rise in temperature when freezing started, showing that there had been some supercooling, the authors explained.

In one case a little finger was dipped into brine at −1.9°C. without any precooling and without a tourniquet. The immersed skin froze hard after 4 minutes.

Results of the various experiments showed that "contrary to general belief, human tissues can freeze at the temperature of freezing sea water (−1.9°C.) and they can sustain injury as a result of being frozen at this temperature." No ill effects were produced by supercooling fingers to the same temperature for the same time.

Although freezing at −1.9°C. for periods of 4-7 minutes did not cause any significant after effects, freezing for 11½ minutes caused pain and distention of the blood vessels for several days. Repeated freezing for shorter periods at intervals of a day or two caused pain, venous congestion and blistering of the skin.

Artificial Sebum

Lanolin Plus, Inc. is using what is claimed to be a duplication of natural skin oils in Lanolin Plus Liquid to provide additional skin moisturizing action. The "sebum" mixture, called "Dew-O-Gen", closely matches the analysis of the most important components of natural skin oil. In contrast with other oils utilized for moisturizing, "Dew-O-Gen" is itself water-dispersible and wets the skin to maintain more intimate contact. Consumer tests are said to show marked skin improvement following the use of the new preparation.

Skin Fatty Acids

The fact that sterilization of the skin surface suppresses its lipolytic activity makes it probable that surface bacteria participate in the formation of free fatty acids of the surface. Considering the fungistatic and bacteriostatic effects of some of these free fatty acids one may regard bacterial origin of free fatty acids as a new example of ecological equilibrium in the bacterial flora: some bacterial species produce substances which keep other (bacterial and fungal) species in check.

On the other hand, the results presented by L. G. Scheimann et al (*J. Invest. Dermatol.* 34: 171, 1960) clearly indicate that sterilization of the skin surface does not completely abolish its lipolytic activity. Whether this non-bacterial lipolysis is due to lipolytic tissue esterases of cellular origin in the mouth of sebaceous glands or elsewhere or whether it is due to microorganisms which do not grow on culture media for bacteria, is to be investigated.

The experiments indicate the possibility that individual differences in the bacterial flora of the skin surface substantially influence the chemical composition of this surface. Such differences may play a role in susceptibility and resistance to infections and also in such constitutional anomalies as seborrheic dermatitis.

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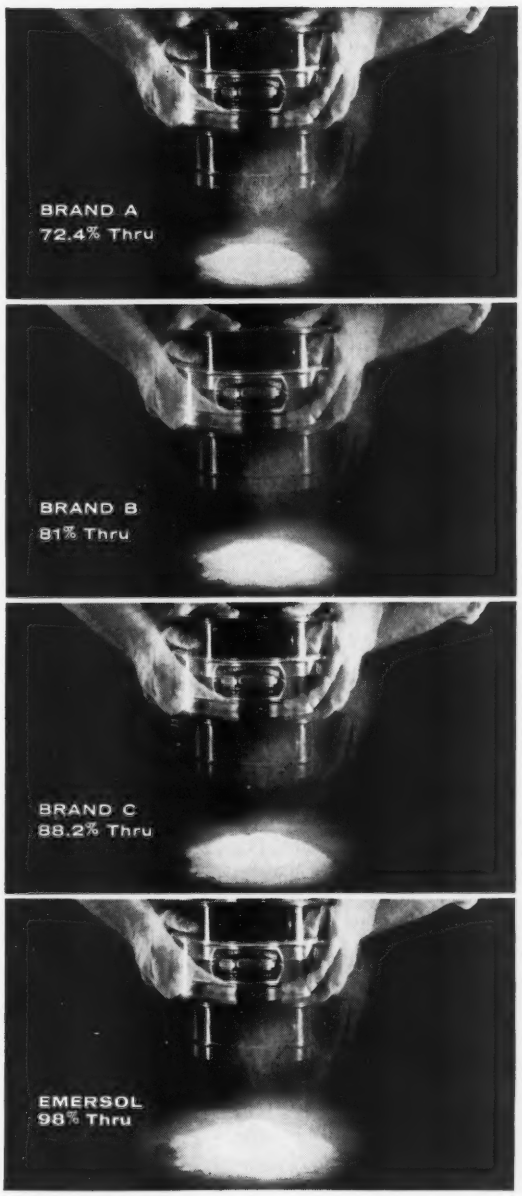

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Fatty Acid Sales Department

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types of esters possible, there are 12 molecular species present in the mixture. The four major components are glyceryl mono- and di- palmitate, and mono- and di-stearate, with small amounts of oleate and myristate esters (total mono- ester and di- ester average about 45 to 47 per cent each, and about 1 to 5 per cent tri- ester). And since there is more palmitic than stearic in "triple-pressed" stearic acid (according to the 55/45 ratio), there is more mono- and di-palmitate present than stearate ester. So it would seem that what the industry sells as glyceryl monostearate is actually a misnomer. A more striking example is the so-called ethylene glycol monostearate, which contains 50 to 60 per cent di- ester and 43 per cent monoester. Based on the composition of the eight esters present in the mixture, this should be designated as ethylene glycol di-palmitate, if made from "triple-pressed" stearic acid. While the acid number, saponification value, and melting point of alternate samples may meet specifications, the amounts of the 12 esters (in glyceryl monostearate) may vary sufficiently to change emulsification behavior and product stability. Another critical factor is the nature of the crystalline forms (polymorphism) of glycerides observed in different samples,[2] and its significance in creams and lotions.[3]

It is therefore strongly recommended that suppliers of these fatty acid esters include in all shipments the complete specifications for these variables. This should include the exact chemical composition of the fatty acids, its method of manufacture, the mono-, di-, and tri- ester content, free fatty acid, and the other standard data such as melting point, color, iodine and saponification value.

The same recommendation is suggested to manufacturers of the other fatty acid derivatives, previously described. The importance of the exact fatty acid or fatty alcohol composition is often overlooked in detergents, alkyl esters, and alkyl ethers, with major emphasis generally placed on its functional properties and elementary specifications. A detailed and complete physical and chemical analysis of the components used in its manufacture, as well as of the finished material would be of considerable value to the cosmetic industry, where uniformity and stability of products are of prime importance. When a production lot shows a loss of emulsion stability, a complete analytical record of the raw materials is invaluable in determining whether the cause is chemical in nature.

There is one area in the fatty acid derivative field which has not been exploited, and is offered for consideration as one that may have potential market value, particularly in the cosmetic industry. Now that single fatty acids of extremely high purity are available, their glyceryl and other polyol esters would have decided advantages over the conventional fatty acid ester mixtures. For example, glyceryl monostearate made with 93 or 97 per cent stearic acid would avoid the inevitable differences in triple-pressed stearic acid composition, and perhaps might become the standard for this material. It is now possible to manufacture glyceryl monopalmitate from 93 per cent palmitic acid, and it may be preferable to other glyceryl esters in certain instances. In effect, these high-purity fatty acids would permit a broader range of hydrophilic-lipophilic characteristics in the glyceryl fatty acid ester emulsifier family, thus adding greater versatility to their use.

An even greater refinement in approaching true chemical purity of nonionic esters is the molecularly distilled glyceryl monostearate containing 90 to 95 per cent monoester. The application of molecular distillation in the preparation of these esters using high-purity fatty acids and various polyols would be the ultimate in supplying the cosmetic industry with the most uniform and nearly chemically pure fatty acid esters. Here is one area which has hardly been explored, probably because of the cost factor, but which certainly merits additional research to create a larger market with its attendant economies in production.

There is another area in fatty acid technology which should command more than academic interest of the cosmetic industry. This involves a study of the properties of fatty acids with more than 18 carbon atoms, such as arachidic (C_{20}), behenic (C_{22}), and lignoceric (C_{24}) in the saturated series; and arachidonic (C_{20} tetra-unsaturated), erucic (C_{22} mono-unsaturated), and clupanodonic (C_{22} penta-unsaturated). The availability of these unusual fatty acids, free from color, odor, and impurities, would certainly strike the imagination of cosmetic research chemists, and perhaps give rise to a new series of derivatives with valuable properties not found in conventional types.

One aspect of fatty acid manufacture which permits greater flexibility in formulation is the availability of very high-purity fatty acids. Lauric acid is available with 95 per cent C_{12} content, myristic acid with 94 per cent C_{14}, palmitic acid with 93 per cent C_{16}, and stearic acid with 94 to 97 per cent C_{18}.

The definite crystalline structure of the conventional 55:45 palmitic/stearic ratio is well known, which may be contrasted with a non-crystalline structure at a 40:60 ratio. The relative crystalline structure of a fatty acid mixture is of critical importance in shaving and vanishing creams, in regard to consistency, rheology, fracture, pearliness, and product stability. By custom blending the single high-purity fatty acids, it may be possible to achieve the desired degree of crystallinity or amorphous nature.

In soap shampoo formulations the foaming properties, bubble size, foam stability, solubility, and detergent action are a function of the fatty acid composition. These properties may be controlled to a degree

(*Continued on page 400*)

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which was impossible before the availability of these single high-purity fatty acids.

Shampoos and dentifrices incorporating synthetic detergents contain a fatty acid component which is part of the surface-active agent, generally derived from coconut oil.

The fatty acids are used in high concentrations in shaving and vanishing creams, soap shampoos, permanent hair coloring, and cologne and deodorant sticks; and in low concentrations in hand lotions, cleansing and emollient creams and lotions, and liquid makeup.

The nonionic fatty acid esters and fatty alcohol ethers serve as emulsifiers, emollients, thickeners, and solubilizers, and are used in these same creams, lotions, and makeup, including lipstick, face powder, mascara, and eye shadow.

The complete dependence of almost all cosmetic formulations on natural fats and oils and fatty acid derivatives is summarized in the drawing. One could list a long series of cosmetic formulations, each containing one or more of these derivatives, but they are readily found in cosmetic books such as *Cosmetics: Science and Technology*,[4] and in suppliers' brochures.

REFERENCES

1. Tillotson, C. C. March 1955. Some physical chemical properties of stearic acid. J. Soc. Cosm. Chem. **6**: 40.
2. Lutton, E. S. July 1950. Review of the polymorphism of saturated even glycerides. J. Am. Oil Chemists' Soc. **27**: 276.
3. Lutton, E. S. March 1955. The polymorphism of glycerides—an application of X-ray diffraction. J. Soc. Cosm. Chem. **6**: 26.
4. Sagarin, E. Ed. 1957. Cosmetics: Science and Technology. Interscience Pub. New York, N. Y.

FATTY ACIDS AND ESTER DERIVATIVES

(*Continued from page 334*)

carbon content which, when hydrogenated, gives a liquid rather than a solid product.[1] It offers a titer value of 3° C. with an iodine value of 7. This structurally modified acid, when evaluated according to oxidation stability on the basis of time required to absorb a specified amount of oxygen, gave a value in excess of 100 days, as compared to that of oleic acid, 1 to 7 days, and of double-pressed stearic acid, 25 days.[2]

Structural modifications of the fatty acids, such as the cleavage and polymerization of unsaturated acids at their C-C double bonds, has led to the formation of a variety of low molecular-weight acids and polymeric types, the derivatives of which have yet to be explored for their potential value to the cosmetic industry.

As one might expect, the improvements in the color, odor, heat stability and over-all purity of the fatty acids are further highlighted in the improved quality of their ester derivatives. While mentioned only in brief, one cannot over-emphasize the importance of this contribution to the expanded use in cosmetic products of ester derivatives as emulsifiers, opacifiers, emollients, and solvents.

The rate of influx of available polyols and hydroxy compounds makes it almost impossible to consider all the derivatives potentially available through combination with the various fatty acids. Many, for instance, trimethylolethane, trimethylolpropane, and trimethylolbutane, are of considerable interest because of their unusual structures and the potential they offer in the way of more functional components in cosmetics. The lactated monoglycerides, which might be considered an off-shoot of the acetylated monoglycerides, show considerable promise as emulsifying agents. The following derivatives are cited as examples on the basis of their unusual structural considerations and also their potential use in fulfilling the requirements of the cosmetic chemist for surface active agents and other components of cosmetic formulations. Methyl glucoside has served as the basis of a series of esters ranging in properties from viscous liquids through soft gelatinous solids to hard waxes, melting at approximately 55° C. Surface tension measurements indicate appreciable reductions at levels of 0.01 per cent.[3] Performance characteristics have been evaluated in a series of creams and lotions, and these give promise of potential value as emulsifying and opacifying agents. Methyl glucoside is a water-soluble, polyhydric alcohol having four hydroxyl groups and two ether groups in its structure. It thus affords a multiplicity of solvating groups for utilization in respect to their strong hydrophilic character, and their solubilizing and solvent effects.

Unusual properties are offered by the series of polyesters formed by the reaction of various fatty acids, glycerol, and short-chain dibasic acids. These polymers containing multiple ester and hydroxyl groups range from low freezing oils to waxlike solids of varying degrees of resilience. They range in hardness from that of beeswax to that of completely hydrogenated cottonseed oil. Melting points of the polyesters that contain stearic acids as the fatty acid, and in which the dibasic acid is adipic, fumaric, or succinic extend from 35 to 67° C.[4]

Earlier we mentioned a structurally modified, liquid saturated fatty acid and it is interesting to note its effects on the properties of certain derivatives presently being used in cosmetics as emollients, opacifiers, and emulsifiers. The n-butyl derivative has a pour point of −25° F. in comparison to +65° and −15° F., respectively, for the equivalent stearate and oleate esters. The glycerol monoester is probably the most unique in view of its pour point of 6° F. against values of 133° and 34° F. for glyceryl monostearate and glyceryl monooleate.[2]

Structurally modified derivatives such as these often hold the solution to many problems of the cosmetic chemist, since they provide functionality, low freezing point with a minimum of unsaturation. This brings up a similar series of fatty acid esters in

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which the structural modification exists in the alcohol moiety rather than in the fatty acid. Cosmetic chemists are familiar with the waxlike character of the cetyl esters of the high molecular weight, saturated fatty acids. While this property is often advantageous, it is also a hindrance to the use of these esters in a number of cosmetic formulations. We have now available a series of what might be called structurally modified cetyl esters, to which we have applied the designation "isocetyl." Thus, in contrast, we have available esters of high emollient character, saturated, with low odor and color, and with freezing points well below 0° C.[5]

New developments in fatty acids and esters of interest to the cosmetic chemist have been interpreted in terms of new products, improved quality, and new structural considerations, but another aspect that warrants mention is the development in application of instrumental analysis and other methods to fatty acids and their derivatives. Gas chromatography has proved of immeasurable assistance in rapid determination of fatty acid composition. Preliminary studies on its application to ester analysis, in particular to the determination of monoglycerides, give promise of its further value.[6] Methods for the analysis of ethoxylated compositions and polyethylene glycol esters give new insight into the compositions of this extensive series of surface active agents. Developments such as these are also of interest to the cosmetic chemist and assist in establishing sound scientific concepts of the relation between performance characteristics and the composition of fatty acids and their esters.

REFERENCES

1. Goebel, C. G. 1959. J. Amer. Oil Chem. Soc. **36**(11): 600-604.
2. Product Bulletin. Emery Industries, Cincinnati, Ohio.
3. Gibbons, J. P. and C. J. Swanson. 1959. J. Amer. Oil Chem. Soc. **36**(11): 553-555.
4. Feuge, R. O. and Audrey Gros. 1959. Ind. & Eng. Chem. **51**: 1019-1022.
5. Product Bulletin. Kessler Chemical Co. Inc. Philadelphia, Penna.
6. Huebner, V. R. 1959. J. Amer. Oil Chem. Soc. **36**(11): 23.

WOOD CELLULOSE AND CORN STARCH

(*Continued from page 337*)

sodium bicarbonate tablets,[9] it is about the percentage recommended for aspirin tablets.[9] As an aid to disintegration, it was decided to add half of the disintegrant to the medicament before granulation, and the rest after the granulation and before compression.

TABLE 1
Formulas for 1000 Sodium Bicarbonate and Aspirin Tablets Weighing 5.6 Grams Using Corn Starch and Solka Floc BW 40 as Disintegrating Agents

Ingredients	$NaHCO_3$ Tablets A*	$NaHCO_3$ Tablets B†	Aspirin Tablets A*	Aspirin Tablets B†
Sodium bicarbonate	324.0gm.	324.0gm.		
Acetylsalicylic acid			324.0gm.	324.0gm.
Corn starch	32.4gm.		32.4gm.	
Solka Floc BW 40		32.4gm.		32.4gm.
Magnesium stearate	3.24gm.	3.24gm.	3.24gm.	3.24gm.
Acacia mucilage 10%	q.s	q.s	q.s	q.s

*Corn Starch.
†Solka Floc BW 40.

Ten per cent acacia mucilage was used as a binder. A weighed amount of powdered acacia was wetted with alcohol in a stainless steel container. The calculated amount of distilled water was then added and mechanically stirred on a water bath until solution was effected. The mucilage was strained while warm through fine muslin. One per cent of the total weight of magnesium stearate was added as lubricant to the granulation before compression, to insure proper flow into the die cavity.

Granulation. The sodium bicarbonate employed met U.S.P. standards. The proper weight of sodium bicarbonate for 1000 tablets was placed in a stainless steel container of proper size and 5 per cent disintegrant was added. This was done for each disintegrating agent tested. Each batch was mixed in a Patterson-Kelly twin shell blender of laboratory size for 30 minutes. To insure uniform hardness of granules, an attempt was made to keep the amount of acacia mucilage equal for the two batches; an average of 110± 5 gm. of acacia mucilage was used. The two batches were then passed through a No. 10 mesh screen by hand. The wet granules were uniformly spread on paper-covered trays and air dried for 25 hours without heat. The dry granules were then passed through a No. 16 mesh screen on the Stokes oscillating granulator. To each batch was added 1 per cent by weight of magnesium stearate, which was passed through a No. 80 mesh screen before use to remove lumps. An extra 5 per cent disintegrant was added along with the lubricant. Each batch was then mixed for five minutes in the Patterson-Kelly twin shell blender. This mixer was chosen because there is no crushing mechanism employed that might destroy the granules.

Acetylsalicylic acid was selected as the insoluble ingredient. Ten per cent disintegrant was used, 5 per cent of which was incorporated with the acetylsalicylic acid before granulation and the remaining 5 per cent after granulation and before compression. Granulation was accomplished by the precompression method using 5/16 inch punch and die for slugs. The slugs were passed through a No. 8 mesh screen on the Stokes oscillating granulator. This process was repeated twice to get a uniform granulation, while the final granulation was passed through a No. 16 mesh screen. The granules were then mixed with 5 per cent of the disintegrant and 1 per cent magnesium stearate as lubricant in the Patterson-Kelly twin shell blender for five minutes.

Compression. The granules were compressed into tablets on a Stokes Model F single-punch tableting machine at a speed of 80 tablets per minute using a 12/32 inch standard punch. The tablet weight was kept constant at 0.36 gm and the tablet hardness was kept at approximately 10 kg. by frequent checks with

(*Continued on page 404*)

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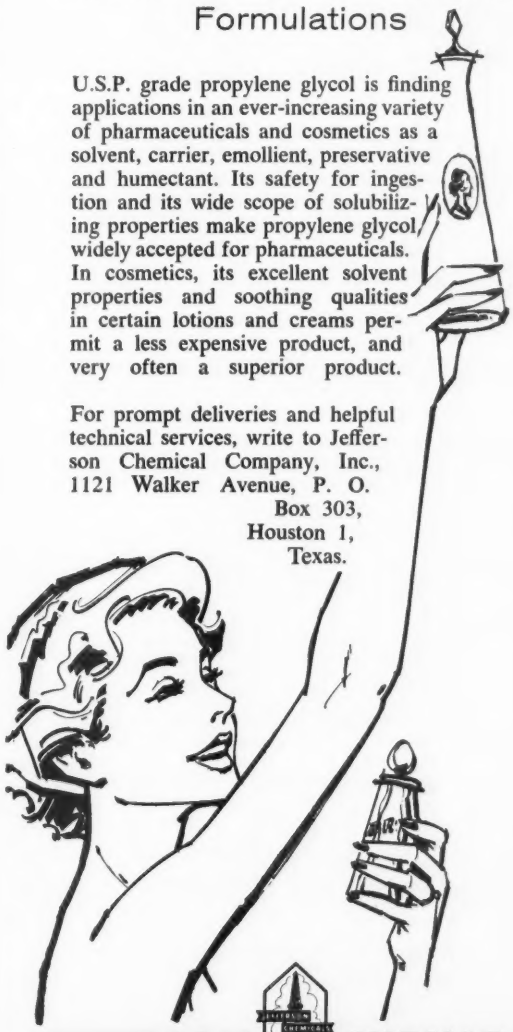

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the Strong, Cobb hardness tester. Sampling was on a 10 per cent basis. After the final granulation, granules for 900 tablets were left. Eleven minutes were required to punch 900 tablets at the rate of 80 tablets per minute; therefore, a sample of 10 tablets was taken every 66 seconds. The following factors were kept constant: (1) Hopper feed opening, by the use of the same hopper for all the granulations; (2) the speed of the machine, at 80 tablets per minute, and, therefore, the heat of compression was uniform for all the batches; and (3) the weight, size, and hardness, kept at an equal initial level for all the batches.

Disintegration. The U.S.P. method[10] and apparatus was used for the determination of disintegration time. The following points were under close observation during the disintegration tests: (1) the temperature of the bath was kept constant at 37° C. ± 2° C.; (2) speed of the motor was kept constant at 28 to 32 cycles per minute; and (3) the level of disintegration media in the beaker was kept constant.

The tablets were placed in the tubes and the basket was set in motion. The condition of the tablets was observed at definite time intervals. The media used was simulated gastric juice U.S.P. The average time per trial was calculated in seconds. The arithmetic mean and standard deviation were calculated for the three trials, and from this the arithmetic mean and standard deviation for the population was calculated. These data are presented in Tables 2, 3, and 4, and in Figures 1 and 2 (on pages 336 and 337).

TABLE 2
Disintegration Time in Minutes of Sodium Bicarbonate Tablets by U.S.P. Test and Hardness of Each in kg. by Hardness Tester*

Sample	Time	Standard deviation		Hardness	Standard deviation	
		Sample	Population mean		Sample	Population mean
Corn starch (1)	3.58					
(2)	3.84					
(3)	4.00	0.72	0.18		3.00	0.39
Mean	3.80			11.60		
Solka Floc BW 40 (1)	12.67					
(2)	13.14					
(3)	11.18	5.60	1.44		3.12	0.41
Mean		12.33		10.85		

*Strong, Cobb hardness tester.

The standard deviations of the hardness of the two batches were very nearly equal, but a large difference was found in the mean and the standard deviation of the disintegration times of the two batches. Figures 1 and 2 illustrate graphically the disintegration times and the breaking strength of the two granulations tested.

The disintegration times of the tablets of each of the two granulations of sodium bicarbonate plus a disintegrant was tested using distilled water at 37± 2° C.

(*Continued on page 406*)

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(Continued from page 404)

TABLE 3
Disintegration Time in Minutes For the Two Batches of Sodium Bicarbonate Tablets Using Distilled Water as Disintegrating Medium.

Disintegrant	Trials			Mean	Standard deviation	
	1	2	3		sample	population mean
Corn starch	8.00	8.10	9.01	8.37	1.91	0.49
Solka Floc BW 40	48.88	47.37	50.17	48.81	5.47	1.41

The mean disintegration time of the tablets containing Solka Floc BW 40 was about six times as long as that for those containing corn starch. The standard deviation of the Solka Floc BW 40 was approximately 2½ times as great as that of corn starch tablets. Figure 1 illustrates the disintegration times of the two batches in distilled water.

TABLE 4
Disintegration Time in Minutes of Aspirin Tablets by U.S.P. Method and Hardness in kg. by Hardness Tester*

Sample		Time	Standard deviation		Hardness	Standard deviation	
			Sample	Population mean		Sample	Population mean
Corn starch	(1)	13.93					
	(2)	7.48					
	(3)	7.81	6.14	1.58		1.48	0.19
Mean		9.74			9.68		
Solka Floc BW 40	(1)	None in 90 min.					
	(2)						
	(3)		——	——		1.20	0.15
Mean		——			10.58		

*Strong, Cobb hardness tester.

The tablets containing Solka Floc BW 40 did not disintegrate in 90 minutes. Figure 2 illustrates the mean breaking strength of the two batches of aspirin tablets.

Discussion

The two disintegrants were compared in tablets containing soluble and insoluble medicaments, since the disintegration time of the compressed tablets depends upon the solubility of the medicament and the excipient. Sodium bicarbonate was chosen for the soluble medicament and acetylsalicylic acid for the insoluble medicament. The binding agent used for sodium bicarbonate tablets was a 10 per cent acacia solution. Acetylsalicylic acid tablets were made by slugging; consequently, no binding agent was necessary.

When tested in simulated gastric juice U.S.P., sodium bicarbonate tablets containing corn starch as the disintegrating agent had a mean disintegration time of 3.80 minutes as compared to 12.56 minutes for tablets containing Solka Floc BW 40. Both the disintegrants yielded tablets smooth and white in appearance. The disintegration of sodium bicarbonate tablets was also tested in distilled water to determine how much of the disintegration was due to the effervesence of sodium bicarbonate in acid media.

In distilled water, the tablets containing corn starch took 8.37 minutes, or 120 per cent longer than was required in simulated gastric juice U.S.P. The tablets containing Solka Floc BW 40 took 48.88 minutes, or 281 per cent longer than was required in simulated gastric juice U.S.P.

Bequette and Huyck[7] compared the disintegration times of tablets containing purified cellulose BW 200 and corn starch as disintegrant with lactose as the soluble agent and calcium gluconate as insoluble agent. Studies were made at 2, 5, and 10 per cent levels. At 5 per cent the cellulose BW 200 product studied seemed to be slightly superior to corn starch.

REFERENCES

1. Firouzabadian, A. and C. L. Huyck. 1954. J. Am. Pharm. Assoc. **43:** 248.
2. Kavorana, H. and H. M. Burlage. 1955. Am. Prof. Pharm. **21:** 348, 450.
3. Corbin, L. C. 1955. J. Am. Pharm. Assoc. **44:** 16.
4. Gerding, T. G. and H. G. DeKay. 1955. Drug Standards. **23:** 32-8.
5. Swintosky, J. V. 1955. J. Am. Pharm. Assoc. **44:** 112; 1958. *ibid.* **47:** 396.
6. Awe, W. and H. Gilbrecht. 1956-1957. Pharm. Ztg. **101:** 1112-14, through C. A. **51:** 2234.
7. Bequette, R. J. and C. L. Huyck. 1957. Drug & Cos. Ind. **81:** 166, 238.
8. Crisafi, R. C. and C. H. Becker. 1958. J. Am. Pharm. Assoc. **47:** 363-366.
9. Martin, E. and E. F. Cook. 1956. Remington's Practice of Pharmacy. 11th ed. Mack Printing Co., Easton, Pa. : 385, 386.
10. The Pharmacopeia of the United States of America. 1955. Fifteenth Decennial Revision. Mack Printing Co., Easton, Pa. : 936.

GLYCERINE AND ITS DERIVATIVES

(Continued from page 339)

part gloss and softness to hair.[10]

Sunscreen Agents

Glycerine has found its way into the sunscreen area by way of a most successfully employed derivative, namely, the glyceryl ester of para-aminobenzoic acid. This agent has been widely used because of its low irritation potential and maximum protection in the erythema-producing spectral region.

McDonough and Edman[8] postulate that acetulated monoglycerides when used in sunscreening systems, be they alcoholic solutions or oil emulsions, should help deposit a continuous screening film with a non-greasy feel.

The hydrophilic and solvent actions of glycerine have increased the protective efficiency of sunscreen agents by improving the continuous deposition of the sunscreen agent on the skin.

Antibacterial and Antifungal Agents

It has been reported by some[11] that the outstanding hygroscopic property of glycerine has endowed it with sufficient dehydrating power to be antiseptic. Although this may be true, glycerine is rarely used alone for this purpose. It has, however, been more widely used as an antibacterial agent when combined with boric acid, phenol, iodine, and thymol. Incidentally, boroglycerine glycerite is still official in the current, tenth edition of the National Formulary. A glycerite of hydrogen peroxide[12] has also

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been used for the local treatment of infections.

Not too many years ago, a true glycerine derivative was found to have both antibacterial and antifungal properties. This product is the glyceryl ether of parachorophenol.[13] Although its activty is not of a high order, it is sufficiently effective to be used at least as a preservative in cosmetic formulation.

An antifungal agent of real merit is glyceryl triacetate. Its effectiveness has been found to be directly attributable to the fact that on the skin it hydrolyzes to glycerine and acetic acid in the presence of esterase,[14] an enzyme found in the skin and in many fungi. It has been found effective against a variety of fungal infections without any untoward reactions.[15]

Emollients

Since 60.8 per cent of human sebum[16] is accounted for by triglycerides and free fatty acids, both saturated and unsaturated, it becomes evident that glycerine and glycerine derivatives would be the most natural agents to use in developing cosmetics intended to soften the skin.

The emollient effects of glycerine have been advocated by many authorities. Even Blank[17] points out that a film of glycerine left on the skin will soften dry skin because of its strongly hydrophilic nature.

Blank also indicated that a dry skin could be softened by increasing the water content of the stratum corneum by the use of either partial or complete occlusive agents. Since practically all the naturally occurring glycerides and all the synthetically produced glycerides can be classed as occlusive agents, they are eligible for use as emollients in cosmetic formulations.

The following list shows a few that have been successfully used as cosmetic emollients: castor oil, coconut oil, lecithin, cocoa butter, and glyceryl fatty acid esters (all types).

Other Functions

In addition to the areas just discussed, in which glycerine and glycerine derivatives show useful properties, we must not forget those additional areas in which either glycerine or a derivative displays valuable features. For example:

Humectant. Glycerine plays an important role in cosmetics as a humectant. Here, we find it effectively preventing moisture loss from all types of water-containing cosmetics. One might say that if price and availability had not been considerations, glycerine would today be the humectant of choice in most instances.

Emulsifiers. Another large category in which glycerine derivatives have demonstrated their usefulness is that of emulsifiers. Glyceryl monostearate, either as the mixture of mono-, di- and triester or as the high monoester, is perhaps the most widely used emulsifier of all the glyceryl fatty acid esters.

Skin Coloring Agent. Chemical Week[18] recently announced the introduction of a new glycerine derivative to modern cosmetics. Dihydroxyacetone, an oxidation product of glycerine, has been claimed to be the active ingredient of the novel, artificial, suntan lotion currently marketed.

Future Considerations

This application of dihydroxyacetone to cosmetics serves to point out the fact that perhaps the glycerine and fatty acid producers of America (and even the technical people of the cosmetic industry) should review the many glycerine derivatives currently available, with an eye toward discovering in them new cosmetic raw materials.

In fact, it appears to me that the time has come to realize that the virtues and limitations of glycerine are well-known to cosmetic chemists; certainly, the literature covering the functional behavior of glycerine in cosmetics has been generously disseminated throughout the world. Perhaps, the area that might well be further investigated by the glycerine and fatty acid producers is that of developing for the cosmetic industry new glycerine derivatives that either will improve the properties of those now in existence, or will introduce new properties of their own.

For example, Ward et al.,[19] of the Southern Regional Research Laboratory, recently announced the development of new glyceryl esters of adipic acid. These may have novel application in cosmetic formulation. They certainly should be evaluated. It might prove even more fruitful if someone synthesized the glyceryl esters of other dibasic acids for their potential use in cosmetics.

Perhaps a closer look at the ethoxylated and propoxylated glyceryl ethers now used as industrial lubricants would suggest some new cosmetic applications.[20]

If there is any trend in cosmetic development, it may be in the direction of producing crystal clear, solid systems. In keeping with this, there is a further need for alcohol gellants that will produce these clear solid systems. A glyceride might well accomplish this effect.

Essentially, glycerine and its derivatives have served the cosmetic industry well in past years, and I am certain that addtional research accenting glyceryl derivatives for the cosmetics of tomorrow could pay large dividends for all concerned.

BIBLIOGRAPHY

1. Wells, F. V. Soap, Perf. & Cos. **30**: Feb., Mar., June, Aug. 1957; **31**: Feb. 1958.
2. Cohan, Louis. Soap & Chem. Spec. : Nov. and Dec. 1956.
3. Babayan, V. K. 1956. J. Soc. Cos. Chem. **7**(3): 225.
4. Brokaw, G. Y. and W. C. Lyman. 1958. J. Amer. Oil Chem. Soc. **35**(1): 49-52.
5. Brokaw, G. Y. and W. C. Lyman, U. S. Patent No. 2,895,879.
6. Kalish, J. 1957. Drug and Cos. Ind. **81**(2): 168.
7. Berdick, M. and E. G. McDonough. 1959. Drug and Cos. Ind. **84**(3): 442.
8. McDonough, E. G. and W. W. Edman. Sci. Proc. T.G.A. (22) : Dec. 1954.
9. De Navarre, M. G. 1941 Chemistry and Manufacture of Cosmetics. Van Nostrand. New York, N. Y. : 415.
10. Ruemele, T. 1949. Alchemist **3**: 271.

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11. Werkman. 1927. Proc. Iowa Acad. Sci. **34**: 85.
12. Brown, Krabeck and Skiffington. New Eng. J. Med. **234**: 468.
13. Hartley, F. Quart. J. Pharm. and Pharmac. **20**(3): 388, 395.
14. South. Pharm. J. Feb. 1957.
15. Johnson, S. A. M. and J. L. Tuura. 1956. A.M.A. Arch. Dermatol. **74**: 73.
16. MacKenna, R. M. B., V. R. Wheatley and A. Wormall. J. Invest. Dermatol. **15**: 33.
17. Frazier, C. N. and I. H. Blank. 1954. A Formulary for External Therapy of the Skin. Charles C. Thomas. Springfield, Ill. : 72.
18. Chem. Week. Dec. 5, 1959.
19. Ward, T. L., A. T. Gros and R. O. Feuge. 1959. J. Amer. Oil Chem. Soc. **36**(12): 667-671.
20. Glycerine Facts. Feb. 15, 1956.

ACTIVATED ATTAPULGITES

(Continued from page 342)

preparations. These substances have been employed in place of kaolin, an ingredient employed heretofore almost exclusively as the major adsorbent for toxic agents. The use of the activated attapulgites in place of kaolin is based on their demonstrated superior adsorbent properties for bacteria and toxin.

The activated attapulgites have been shown to be 5 to 8 times more effective than kaolin[5] as adsorbents for diphtheria toxin. This superiority was maintained when acid-washed activated attapulgites and kaolins were also compared. This is of importance when one considers that the adsorbent clays must pass through the acidic gastric fluid before being utilized in the intestinal tract.

Activated attapulgite regular was found to be many times superior to kaolin in adsorbing *Staphylococcus aureus*.[4]

Neter and Gorzynski[6] found the clay to be capable of adsorbing endotoxins from enteric bacteria, namely enteropathogenic *Escherichia coli* and *Shigella sonnei*. This adsorption was demonstrated by three methods; the enterobacterial hemolysis test, the hemolysis inhibition test, and toxicity studies in mice.[6]

Bartell, Pierzchala, and Tint[26] reported the results of an *in vitro* study in which they demonstrated the adsorption of several representative human enteroviruses by activated attapulgite regular. The viruses adsorbed by the clay were poliovirus types 1, 2, and 3; ECHO-9[1]; and Coxackie B-3. The adsorption of the viruses by activated attapulgites was superior to that demonstrated with kaolin.

Another property in favor of the use of the activated attapulgites in intestinal adsorbent preparations is their superior absorptive properties as compared with kaolin. By its highly effective absorption of the aqueous part of inflammatory secretions, activated attapulgite aids in stool formation.

Antacid Preparations. The ability of the activated attapulgites to neutralize acidity is a property which permits use of these ingredients as antacids. Both grades of activated attapulgite are many times superior to kaolin as acid neutralizers (Figure 4).[7] The acid neutralization as produced by the activated attapulgites is of the delayed type. Because of the mechanism involved in the adsorption of acid by the activated attapulgites, it is unlikely that such sub-

stances will cause acid rebound. The activated attapulgites do not produce alkalosis or liberate carbon dioxide. This is advantageous in antacid preparations.

Fungicidal Powders. It is a well-accepted fact that the common condition of athlete's foot can be alleviated or cured if the fungi causing the infection can be deprived of moisture. Based on this thesis, there is on the market a broad range of powder formulations designed to keep the areas between the toes dry and, to a variety of degrees, provide certain medicaments to ameliorate the fungus condition.

The regular grade of activated attapulgite has high sorptive properties for moisture. It is many times more sorptive than talc or kaolin, the most common diluents in fungicidal powders.

In order to prove the advantage of utilizing activated attapulgite regular as a sorptive agent for moisture in the formulation of fungicidal foot preparations, an experiment[8] was carried out in which the amount of water sorbed by a commercial product and the same product, to which increasing quantities of the clay were added, were compared. The procedure used in the studies consisted of weighing 10 gm. of the powder samples into petri dishes and placing the dishes in humidity chambers under two conditions: (1) at 21.11° C. at 100 per cent relative humidity, and (2) at 37° C. at 100 per cent relative humidity. The dishes were weighed after 1, 2, 4, 7, 24, and 48 hours of subjection to the test conditions, the increase in weight representing the sorption of water vapor by the foot powder samples. The results are reported in Figures 5 and 6.

While all powders containing activated attapulgite regular showed significant increases in the amount of water sorbed, it is thought that the period between 10 and 15 hours is the most significant in that this is a good average figure for the length of time that shoes are on the feet. As shown in Figures 5 and 6, the samples containing activated attapulgite show from a 50 to a 200 per cent increase in water sorbed over the commercial fungicidal powder control sample during this important time period. It is interesting to note that all samples containing activated attapulgite regular continued to show an upward trend in moisture sorbed at 48 hours, indicating that the full sorptive powers of this material had not been exhausted even under extreme conditions.

Studies have shown that an optimum concentration of activated attapulgite regular which should be added to talc in formulating fungicidal foot powders is 15 per cent. At this concentration, there is significant improvement in the amount of moisture sorbed by the powder, while the good color and excellent slip of the preparation is also maintained. In addition, there is also brought about an improved clinging property.

Acne Preparations. Activated attapulgite colloidal has also been employed for its therapeutic value in

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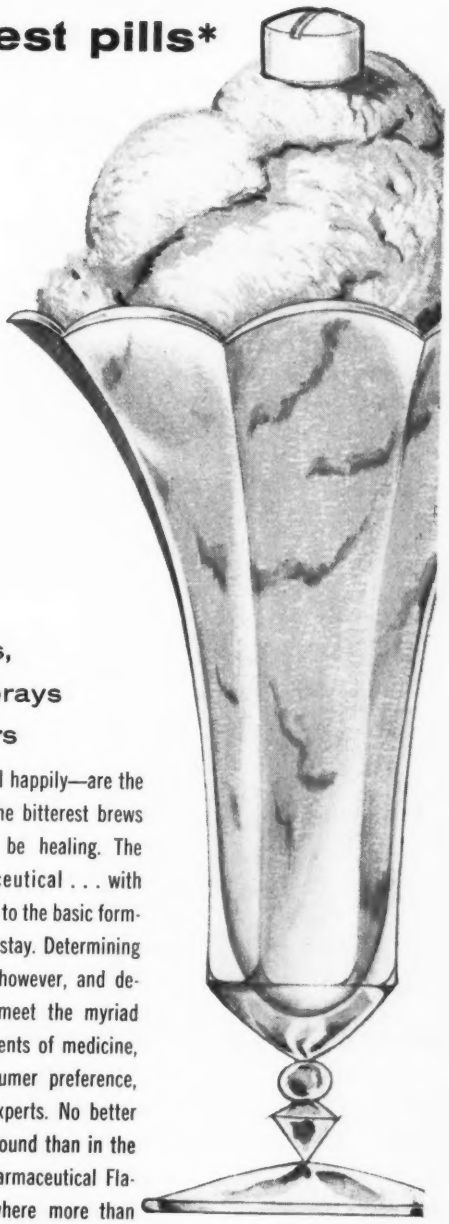

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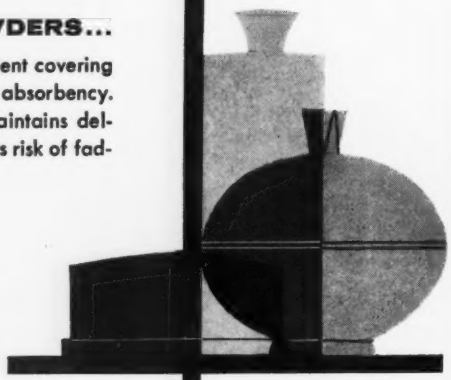

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(*Continued from page 411*)

the treatment of acne, other seborrhea, and related conditions. One pharmaceutical company[22] which markets a lotion containing activated attapulgite colloidal for such uses, bases its effectiveness on its high degree of surface activity and sorptive properties for oils (such as the oily secretions of the pilosebaceous glands), it being many times more sorptive than bentonite and kaolin.[8] This sorptive property is thought important acne therapy since excessive oils on the skin surface are considered to be contributing factors to the skin condition.[23] The removal of these oils from the skin surface aids in the promotion of the free flow of sebum, thereby reducing the likelihood of follicular plug formations.[24] Furthermore, it has been shown that activated attapulgite colloidal is highly effective in adsorbing toxins and bacteria,[4-5] a property beneficial in the prevention of secondary infection.

Another advantageous property of the activated attapulgites is their ability to adsorb obnoxious odors often possessed by lotions containing sulfur, and the like.

It has also been suggested that the sorptive properties of activated attapulgite for toxins, bacteria, and secretions may be made use of in the treatment of poison ivy and extreme sunburn.

Tableting. The activated attapulgites may be satisfactorily granulated and compressed to form tablets. The colloidal grade is more satisfactory for this purpose than the regular grade. Tablets containing the activated attapulgites have been employed as gastric antacids and in the treatment of intestinal upsets.

An application of the activated attapulgites in tableting can be seen in the preparation of formulations containing active ingredients which, because of their physical state, produce tableting problems. Because of their sorptive properties, the activated attapulgites make possible the preparation of tablets containing such substances.[25]

Veterinary Preparations. The activated attapulgites have been clinically tested with excellent results in the form of large boluses for the control of dysentery in cattle and other large animals, and in liquid or tablet form for small animals.

Suspending Agents. As has been mentioned previously, the viscosities of aqueous suspensions of activated attapulgite colloidal are many times greater than that of the regular grade. The high viscosities in aqueous suspensions that are produced by activated attapulgite colloidal make it suitable as a suspending agent in pharmaceutical preparations. Aqueous suspensions of this substance are thixotropic, and advantage may be taken of this property in the formulation of pharmaceutical suspensions. The ability of activated attapulgite colloidal to form gels in aqueous dispersion has led to its use in the preparation of greaseless ointment bases.

(*Continued on page 413*)

Cosmetic Applications

Many of the properties of the activated attapulgites which have previously been reviewed permit application of these substances in the formulation of cosmetic products. Some of these applications will be reviewed here.

Face Powders. Activated attapulgite colloidal is an excellent adjunct in face powders. It may be used for removing the shine of talc, for its sorptive properties for moisture, and for its adhering characteristics. Examples of face powder formulations utilizing activated attapulgite colloidal follow:

	I	II	III
Activated attapulgite colloidal	15	10	15
Calcium carbonate light	10	—	10
Zinc oxide	15	15	15
Zinc stearate	5	10	5
Magnesium carbonate light	5	15	5
Talc	50	50	45
Titanium dioxide	—	—	15
Perfume	q.s.	q.s.	q.s.

Formula I represents an average formulation for a medium covering and absorbent powder. Formula II represents a lighter, more absorbent powder. A more covering face powder is illustrated by Formula III.

Baby Powders. Baby powders are used principally as lubricants in skin folds to prevent chafing, to absorb perspiration and relieve prickly heat, and to impart a clean, pleasant fragrance to the baby's skin.

Activated attapulgite colloidal has appreciable sorptive properties for moisture and, in addition, has sorptive properties for many odors, including those produced by urine and its decomposition products. It also imparts greater adherence properties to the skin than talc, the chief ingredient of baby powders. An example of a baby powder formulation possessing the advantageous properties of activated attapulgite colloidal follows:

Talc	90
Lithium stearate	3
Activated attapulgite colloidal	5
Zinc oxide	2
Perfume	q.s.

Bath Powders. The purpose of a bath powder is to keep the skin dry and to minimize body odor. Because of its sorptive properties for moisture and body odors, as well as its adherence properties, activated attapulgite colloidal finds a role in the formulation of bath powders. An example of such a formulation follows:

Talc	70
Magnesium carbonate light	5
Activated attapulgite colloidal	8
Zinc stearate	4
Zinc oxide	3
Heavy chalk	10
Perfume	q.s.

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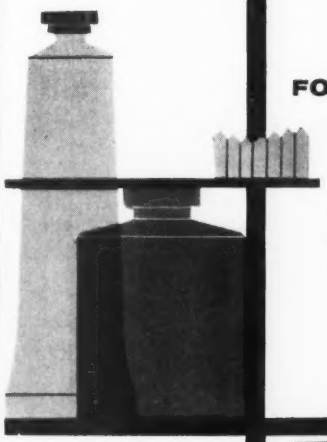

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agent which they contain. Such substances inhibit the growth of bacteria that are thought to produce unpleasant body odors, as a result of their utilization of the constituents of perspiration as nutrients.

The inclusion of activated attapulgite colloidal in the formulation of deodorant powders and creams is indicated in view of the ability of this substance to have sorptive properties for odors, moisture, and bacteria. Examples of such formulations follow:

Deodorant Powder	
Talc	60
Magnesium carbonate light	19
Activated attapulgite colloidal	10
Boric acid	10
Zinc phenolsulfonate	1
Perfume	q.s.

Deodorant Cream	
Activated attapulgite colloidal	5
Hexachlorophene	0.5
Glyceryl monostearate	10
Stearic acid	4
Cetyl alcohol	2
Isopropyl myristate	4
Potassium hydroxide	1
Propylene glycol	7
Purified water	66.5
Perfume	q.s.

Dry Shampoos. The purpose of a dry shampoo is to cleanse the hair and scalp without the use of moisture. Activated attapulgite may be employed as an ingredient in such formulations because of its sorptive properties for dirt and oils, the regular grade being preferred. An example of a dry shampoo formulation employing activated attapulgite regular as an ingredient follows:

Borax	6
Talc	60
Sodium sesquicarbonate	17
Activated attapulgite regular	17
Perfume	q.s.

Beauty Masks. Beauty masks function to cleanse the skin. They usually contain a clay which serves to adsorb dirt from the skin. Activated attapulgite colloidal may be employed as a constituent in such formulations, an example of which follows:

Activated attapulgite colloidal	85
Magnesium carbonate light	15
Water	to make a paste

Rouge Powders. Activated attapulgite colloidal may be employed in formulations for rouge powders because of its ability to impart bonding properties to the powders. It is capable of doing this because of its sorptive properties for moisture. The clay must be used with care since spotting and streaking may occur if it is used in too high a percentage. An example of such a formulation follows:

Talc	54
Activated attapulgite colloidal	10
Chalk	4
Magnesium carbonate	4
Zinc stearate	4

Titanium dioxide	12
Color	12
Perfume	q.s.

Hair Colorings. Vegetable substances such as henna and camomile are used for their hair pigmenting properties. One method of applying these plant pigments is by means of a henna or camomile pack. In preparing the packs, the pigment in powdered form may be mixed with an equal quantity of activated attapulgite regular.

Summary

Activated attapulgite is a hydrous magnesium aluminum silicate with unusual sorptive properties for odors, moisture, toxins, enteroviruses, and bacteria. Two grades of activated attapulgite are presently available: regular and colloidal. Because of the unusual sorptive properties of these newer basic ingredients, they invite many applications in the development of pharmaceutical and cosmetic products.

REFERENCES

1. De Lapparent, J. 1936. Formula and structure of attapulgite, Compt. rend. **202:** 1728-1731.
2. Bradley, W. F. 1940. The structural scheme of attapulgite. Am. Mineral **25:** 405-410.
3. Barr, M. and E. S. Arnista. 1957. J. Am. Pharm. Assoc. **46:** 486-489.
4. Barr, M. 1957. J. Am. Pharm. Assoc. **46:** 490-492.
5. Barr, M. and E. S. Arnista. 1957. J. Am. Pharm. Assoc. **46:** 493-497.
6. Neter, E. and E. A. Gorzynski. 1958. J. Am. Pharm. Assoc. **47:** 651-653.
7. Preliminary Product Information on Pharmasorbs. Revised edition, May 1959. MDX-101. Minerals & Chemicals Corporation of America, Menlo Park, N. J. : 3-5.
8. Communication from Robert W. Wilkerson, Minerals & Chemicals Corporation of America, Menlo Park, N. J.
9. Goodman, L. S. and A. Gilman. 1955. The Pharmacological Basis of Therapeutics. 2nd ed. MacMillan Co., New York, N. Y. : 1020.
10. Martin, G. H. 1955. Ion Exchange and Adsorption Agents in Medicine. Little Brown and Co. Boston, Mass. : 241.
11. Stumpf, J. 1914. Munch med. Wchmschr. **61:** 2050.
12. Kuhne, V. 1918. Rev. med. Suisse romande. **38:** 555.
13. Walker, R. R. 1921. Lancet **2:** 273.
14. Jordan, A. C. 1925. *ibid.* **1:** 1274.
15. McRobert, S. R. 1934. Brit. Med. J. **2:** 304.
16. Schwartz, I. R. 1946. Gastroenterology **6:** 105.
17. Hayem, G. 1931. Bull. Acad. Nat. Med. (Paris) **106:** 224.
18. Greene, B. L. and L. H. Block. 1938. Am. J. Digest Diseases **5:** 684.
19. Tumen, H. J. 1942. Northwest. Med. **41:** 42.
20. Swalm, W. A. 1934. Med. Record **140:** 26.
21. Smith, W. 1937. Lancet **1:** 438.
22. Sebasorb. Summers Laboratories, Inc. Ambler, Pa.
23. Sutton, R. L. and R. L. Sutton, Jr. 1949. Handbook of Diseases of the Skin. C. V. Mosby Co. St. Louis, Mo. : 400.
24. James, K. W. and J. B. Tisserand. 1958. GP. **18:** 134-135.
25. Pharmasorb Progress Report. March 1959. Minerals & Chemicals Corporation of America. Menlo Park, N. J.
26. Bartell, P., W. Pierzchala and H. Tint. 1960. J. Am. Pharm. Assoc. **49:** 1.

PHARMACEUTICAL MARKETING

(*Continued from page 327*)

FACT 8

We have probably reached the time when we should devote less attention and money to art and more time and thought to the copy in our advertising. It is sometimes difficult to simplify without sacrificing accuracy, and, frankly, it is sometimes difficult to state the whole truth briefly. However, we must keep before us the fact that nothing is quite so interesting and fascinating as the truth.

FACT 9

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be helpful to the physician. Our market research activity cannot replace creative imagination, good taste, and sound judgment, but it can supplement these talents as an indispensable tool.

FACT 10

Any unbiased observer of pharmaceutical promotion will agree that its standards have risen consistently over the last quarter century. None the less, there is always room for improvement, and we in this industry need to keep in mind that trifles make perfection but perfection is not a trifle.

Finally, may I advise you not to look back on my own record to see how well I have done the very things that I have recommended or suggested to you. If you do so, you may find that I have personally failed in many cases to follow the path that I am preaching today. But, we learn from our failures as well as our successes. Unfortunately, however, our industry has now reached the point in its maturity where we shall be judged by our failures as well as our successes, not by our successes alone.

Despite the recent criticism leveled at us, we in this industry have something that is very precious. We have the confidence and the good will of the professions of pharmacy and medicine, as well as that of the general public. We have earned this confidence and esteem, which even transcends our commercial objectives. It is the most valuable asset we own—more valuable than brains, brilliance, leadership, real estate, plants, or equipment.

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PATENT THOUGHTS

(*Continued from page 357*)

by the literature of chemistry, what is the reader's *considered* opinion?

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2,908,650—Colgate-Palmolive — Pressurized Shaving Cream.

2,908,681—Dow Chemical—Esters of 2-Hydroxypropylsucrose.

2,908,682—G. D. Searle—4, 5-Epoxysteroids.

2,908,683—Soc. Usines Chem. Rhone-Poulenc—Phenthiazines.

2,908,686 — Hoffmann-LaRoche — Octahydro-Indolo-Quinolizines.

2,908,687—Takeda (Japan)—Isonicotinoyl Carbalkoxyhydrazines.
2,908,688—Hoffmann-LaRoche—Methyl Isoxazole Carboxylic Acid Hydrazides.
2,908,689—Norwich—Complex of 5-Nitro 2-Furaldehyde and 2-Oxazolidone.
2,908,691—G. D. Searle—Hydroxyphenalkylaminoalkylindoles.
2,908,694—Am. Cyanamid—7-Substituted Thio-4- Androstenes.
2,908,696—Schering—1, 5-Pregnadienes.
2,909,463-4—Upjohn—Amicetins A and C.
2,909,466—Chas. Pfizer—Stable Solutions of Oxytetra cycline Salts.
2,909,467—U. S. Vitamin & Pharm.—5-Methyl-1, 3-Oxazolidine-2, 4-Dione Derivatives.
2,909,517—Upjohn—Amicetin.
2,909,522—Burroughs Wellcome—Trialkoxybenzylpyrimidines.
2,909,523-4—Am. Cyanamid—Substituted Piperazines.
2,909,526—U. S. Vitamin & Pharm.—Aminoalkoxyalkylpiperidines.
2,909,527-8—U. S. Vitamin & Pharm.—Substituted Betaines.
2,909,530—W. R. Grace & Co.—Physostigmines.
2,909,567—W. R. Grace & Co.—Acyclic Hydrazinium Salts.
2,909,569—U. S. Vitamin & Pharm.—Chlorobenzylated Indanols.
2,910,403—National Drug — Anti Hypertensive Compositions Comprising 2-Methyl 5, 8-Dimethoxychromones.
2,910,465—Mead, Johnson—1, 4-Bis(D-glucosyl) Piperazine.
2,910,468—F. E. Dearborn—Sulfurized Sterols.
2,910,469—Ciba—21-Hydroxy Steroids.
2,910,470—G. D. Searle—3-Oxocona-1, 4-Dienine.
2,910,473-4—Merck—6-Nitro and Amino, 7-Sulfamyl-Benzothiadiazine-1, 1-Dioxides.
2,910,478-9—Ciba—Thiazolines.
2,910,486—G. D. Searle—10-Hydroxyestra-1, 4-Diene-3, 17-Dione.
2,910,488—Merck—Sulfamyl-anthranilic Acids.
2,910,505—Am. Home Products—S-Substituted-N-Benzhydryl Pseudothioureas.
2,911,402—Riker Labs.—Salonidenes.
2,911,404—G. D. Searle — Epoxy Dihydroxy Pregnenones.
2,911,406—G. D. Searle—Hydrazino Benzotriazines.
2,911,408—Lakeside Labs. — Hydroxypiperidino-N-Alkylene Aldehydes.
2,911,409—Upjohn—2-Spiro-Substituted Pyrrolidines.
2,911,411—UCLAF (France)—Tropolenes.
2,911,418—G. D. Searle—Halo Oxygenated Androstenols.
2,911,441—Am. Cyanamid—Tetracycline Quat. Alkylhalides.
2,912,358—Bristol-Myers—Antacid Preparation.

(*Continued on page 420*)

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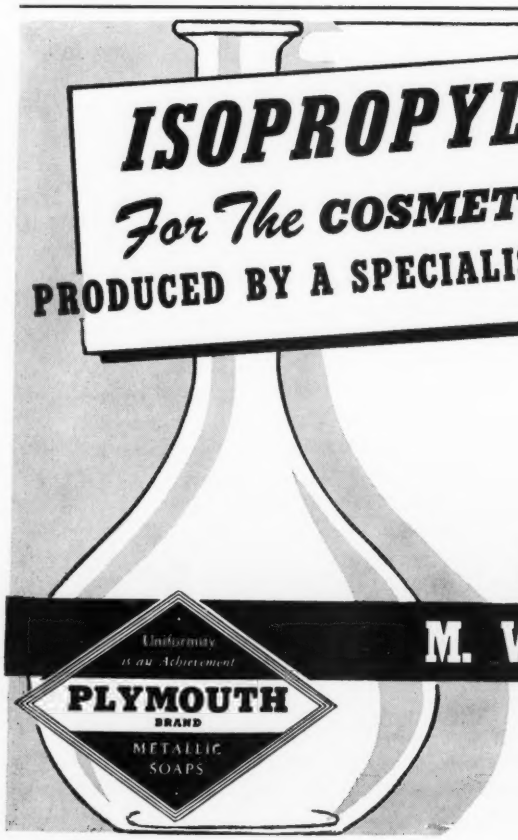

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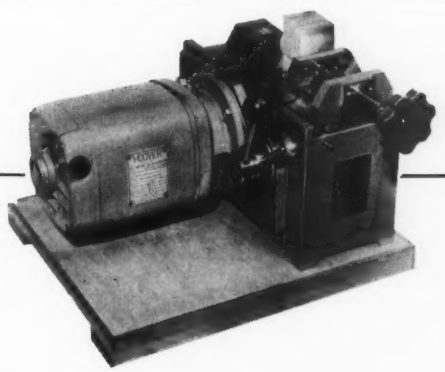

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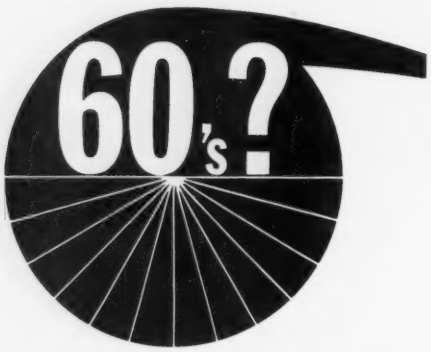

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2,921,075—U. S. Vit. & Pharm. Corp.—Carbamidomethyl Quat. Salts of Tropine.
2,921,076—Parke, Davis—Heterocyclic Compounds.
2,921,077—Schenley — Mthyl Carbalkoxy-N-Alkyl-Amino-Acylanilides.
2,921,078—Ethicon—Dihydro and Tetrahydrofurans.
2,921,082—Ethicon — N-Heptadecanoyl-2, 5-Dimethoxy-Tetrahydrofuran.
2,921,091—U. S. Vit. & Pharm. Corp.—Carbamidomethyl Hydroxyethyl Urea.
2,921,092—Warner-Lambert — Dialkylaminoalkylphenyl Ketones.
2,921,093—U. S. Vit. & Pharm. Corp.—Alkylene Bis (N-Methyl Dialkyl) Anilines.
2,921,094—U. S. Vit. & Pharm. Corp.—Methyl Dialkylanilino Alkyl Halides.
2,921,882—Air Reduction — Germicidal Compositions Containing Aromatic Acetylenic Diols.
2,921,883—Smith, Kline & French Labs.—Novel Coating Material for Medicaments.
2,921,884—Strling Drug—Medicinal and Diagnostic Suspensions.
2,921,886—Colgate-Palmolive—Dentifrice.
2,921,907—Monsanto—Stabilization of Antiseptic Detergents.
2,921,936—Ciba—Aminoalkyl Thiazoline Ones.
2,921,937—Chas. Pfizer—Phenazines.
2,921,956—G. D. Searle—Dimethyl Oxoperhydrophenanthrene Carboxylic Acid.
2,921,966—Abbott Labs.—Methylenecyclopropanemethanol.
2,922,743—Eli Lilly—Amebicidal Compositions.
2,922,744—Eli Lilly—Therapeutic Processes Employing Aminobenzodioxane Medicaments.
2,922,745—Ortho Phar.—Purified Profibrinolysin.

(*Continued on page 429*)

COMING EVENTS . . . . .

MARCH

15-16 **American Broncho-Esaphogological Assn.**, Deauville Hotel, Miami Beach, Fla. (Dr. F. Johnson Putney, 1712 Locust St., Philadelphia 3, Penna.)

15-17 **American Laryngological, Rhinological and Otological Society**, Deauville Hotel, Miami Beach, Fla. (Dr. C. Stewart Nash, 708 Medical Arts Building, Rochester 7, N. Y.)

16 **American Society of Perfumers**, open meeting, Advertising Club, N. Y. C. (Dorothy A. Douglass, A.S.P., 630 Fifth Ave., N. Y. C. 20)

18-19 **American Laryngological Assn.**, Deauville Hotel, Miami Beach, Fla. (Dr. Lyman Richards, Massachusetts Institute of Technology, Cambridge 39, Mass.)

22-23 **Pharmaceutical Manufacturers Assn.**, Pharmaceutical Contact Section, Shoreham Hotel, Washington, D. C. (Dr. Karl Bambach, 1411K Street, N.W. Washington 5, D. C.)

23 **Oil Trades Assn. of New York**, Waldorf-Astoria Hotel, N. Y. C.

26 **State Pharmaceutical Assn. Secretaries**, national conference, Statler-Hilton Hotel, Washington, D. C.

27-28 **American Pharmaceutical Assn.**, House of Delegates' interim meeting, Statler Hilton Hotel, Washington, D. C.

31 **Society of Chemical Industry, Microbiology Group**, symposium on continuous culture of microorganisms, London (through April 1)

APRIL

1-2 **American Gastroenteral Assn.**, Roosevelt Hotel, New Orleans, La. (Dr. Wade Volwiler, Dept. of Medicine, University of Washington, Seattle, Wash.)

1-3 **American Society of Internal Medicine**, Mark Hopkins Hotel, San Francisco, Calif. (Robert L. Richards, 350 Post St., San Francisco 8, Calif.)

2-6 **American College of Obstetricians and Gynecologists**, Netherland Hilton Hotel, Cincinnati, Ohio (Donald F. Richardson, P. O. Box 749, Chicago 90, Ill.)

3-5 **American Oil Chemists' Society**, spring meeting, Baker Hotel, Dallas, Texas

4-7 **Pharmaceutical Manufacturers Assn.**, annual meeting, Boca Raton Hotel, Boca Raton, Fla. (Dr. Karl Bambach—see above.)

4-7 **American Management Assn.**, national packaging exposition and convention (April 4-6), Convention Hall, Atlantic City, N. J. (Packaging Exposition, Clapp & Poliak, Inc., 341 Madison Ave. N. Y. C. 17)

5-14 **American Chemical Society**, spring national meeting, Cleveland, Ohio (A. T. Winstead, A.C.S., National Meetings Dept., 1155 Sixteenth St., N.W., Washington 6, D. C.)

8-9 **Society of the Plastics Industry**, western section conference, New Riviera Hotel, Palm Springs, Calif. (S.P.I., 250 Park Ave., N. Y. C. 17)

8-12 **American Dermatological Assn.**, Boca Raton Hotel, Boca Raton, Fla. (Dr. Wiley M. Sams, 308 Ingraham Bldg., Miami 32, Fla.)

11-15 **American Assn. of Immunologists**, Chicago, Ill. (Dr. Calderon Howe, Columbia University College of Physicians and Surgeons, N.Y.C. 22)

11-15 **Federation of American Societies for Experimental Biology**, annual meeting, Conrad Hilton Hotel, Chicago, Ill.

11-16 **American Society of Biological Chemists**, Chicago, Ill. (Dr. Frank W. Putnam, Dept. of Biochemistry, Univ. of Fla., Gainesville, Fla.)

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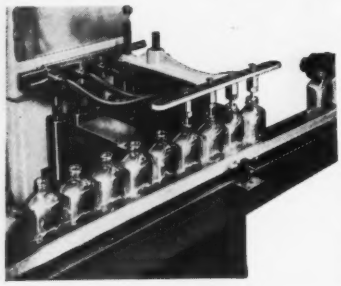

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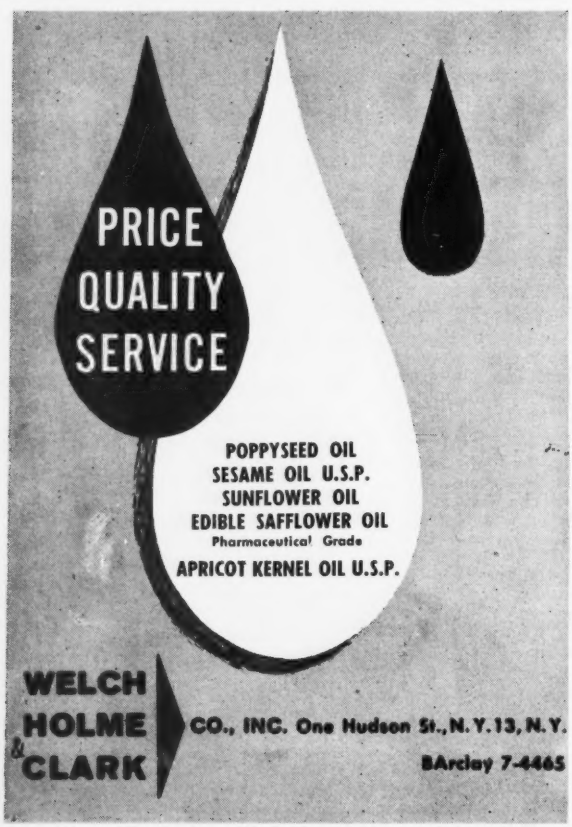

APRIL (Continued)

13-15 American Public Health Assn., southern branch, Memphis, Tenn.

14 Pharmaceutical Advertising Club, luncheon meeting, Hotel Roosevelt, N. Y. C. (D. Lindsay, P.A.C. Suite 608, 489 Fifth Ave., N. Y. C.)

17-19 Animal Health Institute, annual meeting, Shoreham Hotel, Washington, D. C.

18-20 Gas Chromatography Symposium, Canisius College, Buffalo, N. Y. (Dr. Herman A. Szymanski, Canisius College, 2001 Main St., Buffalo 8, N. Y.)

19-21 Research and Development Associates, Food and Container Institute, annual meeting, Congress Hotel, Chicago, Ill.

20 Society of Plastics Engineers, north Texas section, annual regional technical conference, Hotel Texas, Fort Worth, Texas

20 Society of Cosmetic Chemists, New York Chapter, monthly meeting—ladies' night, Hotel New Yorker, N. Y. C. (Dr. Saul Bell, S.C.C., 2 East 63rd St., N. Y. C.)

25-26 Society of the Plastics Industry, Canadian section, London Hotel, London, Ontario, Canada. (S.P.I., 250 Park Ave., N. Y. C. 17)

28 American Society of Perfumers, annual open symposium, Essex House, N. Y. C. (Dorothy A. Douglass, A.S.P., 630 Fifth Ave., N. Y. C. 20)

28-30 American Assn. of Pathologists and Bacteriologists, Hotel Peabody, Memphis, Tenn. (Dr. Russell L. Holman, Dept. of Pathology, L.S.U. School of Medicine, New Orleans, La.)

29 Parenteral Drug Assn., scientific meeting, Warwick Hotel, Philadelphia, Penna. (P.D.A., 1420 Snyder Ave., Philadelphia 45, Penna.)

MAY

2-11 Pan American Medical Assn., Section on Pharmacology and New Drugs, congress, Mexico

4-7 Flavoring Extract Manufacturers Assn., annual convention, Traymore Hotel, Atlantic City, N. J.

7-13 Society of the Plastics Industry, national conference and annual meeting, cruise on the "Queen of Bermuda." (S.P.I., 250 Park Ave., N. Y. C. 17)

8-11 Proprietary Association, annual meeting, The Greenbrier, White Sulphur Springs, W. Va. (Dr. Howard A. Prentice, 810 18th St., N.W., Washington 6, D.C.

9-13 Instrument Society of America, instrument-automation conference and exhibit for San Francisco, Brooks Hall, San Francisco, Calif.

9-14 International Symposium on Fermentation, Italian Institute of Public Health, Italian Chemical Society, and Fermentation Division of the Agricultural and Food Chemistry of the A.C.S., Rome, Italy

11 Toilet Goods Assn., Scientific Section, Waldorf-Astoria Hotel, N.Y.C. (Kathryn Fitzpatrick, Americas Bldg., Rockefeller Center, N.Y.C. 20)

11-13 Synthetic Organic Chemical Manufacturers Assn., annual spring outing, Shawnee-on-Delaware, Penna. (S. Stewart Graff, S.O.C.M.A., 41 East 41st St., N. Y. C. 17)

11-13 American Material Handling Society, in conjunction with annual western handling show and packaging cavalcade, Great Western Exhibit Center, Los Angeles, Calif.

11-13 Synthetic Organic Chemical Manufacturers Assn., spring outing, Shawnee Inn, Shawnee-on-Delaware, Penna.

12 Pharmaceutical Advertising Club, promotion clinic, Hotel Roosevelt. (D. Lindsay, P.A.C., Suite 608, 489 Fifth Ave., N. Y. C.)

MAY (Continued)

12 **Society of Cosmetic Chemists,** spring meeting, Hotel Biltmore, N. Y. C. (S.C.C. 2 E. 63rd Street, N. Y. C. 21)

15-18 **Proprietary Assn.,** annual meeting, The Greenbrier, White Sulphur Springs, West Va. (Dr. Howard A. Prentice, 810 18th Street, N.W., Washington 6, D. C.)

16-17 **Chemical Market Research Assn.,** annual meeting, Hotel Baltimore, N. Y. C.

16-18 **Chemical Specialties Manufacturers Assn.,** mid-year meeting, Drake Hotel, Chicago, Ill. (C.S.M.A., 50 E. 41st St., N.Y.C 17)

18 **American Society of Perfumers,** open meeting, Advertising Club, N. Y. C. (Dorothy A. Douglass, A.S.P., 630 Fifth Ave., N. Y. C. 20)

19 **Cosmetic Industry Buyers & Suppliers Assn.,** special ladies' day luncheon meeting, N. Y. C. (Frank N. Pond, Dominion Products, Inc., 10-40 44th Drive, Long Island City 1, N. Y.)

19-20 **Pharmaceutical Manufacturers Assn.,** Production and Engineering Section, The Broadmoor, Colorado Springs, Colo. (Dr. Carl Bambach, P.M.A., 1411 K Street, Washington 5, D. C.)

JUNE

1-3 **Instrument Society of America,** annual instrumental methods of analysis symposium, Montreal, Quebec.

6-8 **American Material Handling Society,** New England show, Commonwealth Armory, Boston, Mass.

8-10 **Society for Analytical Chemistry and Gas Chromatography,** symposium on gas chromatography, Assembly Rooms, Edinburgh, Scotland

9-11 **Manufacturing Chemists Assn.,** annual meeting, Greenbrier Hotel, White Sulphur Springs, West Va.

9-12 **American Therapeutic Society,** Barcelona Hotel, Miami Beach, Fla.

11-12 **American Diabetes Assn.,** Hotel Deanville, Miami Beach, Fla.

12-15 **Extension Services in Pharmacy,** annual national industrial pharmaceutical research conference (stabilization and stability testing of pharmaceuticals), King's Gateway. Land O' Lakes, Wisc. (Richard S. Strommen, E.S.P., Univ. of Wisconsin, Madison, Wisc.)

12-17 **Pharmaceutical Society of the State of New York,** annual convention, Saranac Inn, Upper Saranac Lake, N. Y.

13-15 **Chemical Institute of Canada,** annual conference and exhibition, Ottawa, Canada

13-15 **1960 Microscopy Symposium,** Del Prado Hotel, Chicago, Ill. (Walter C. McCrone Associates, sponsors)

13-17 **Gordon Research Conferences,** lipide metabolism, Kimball Union Academy, Meriden, N. H.

13-17 **American Medical Assn.,** annual meeting, Miami Beach, Fla.

13-17 **Pharmaceutical Advertising Club,** annual P.A.C.-M.P.A.C. joint meeting.

16-17 **National Colloid Symposium,** A.C.S. Division of Colloid Chemistry, University Center, Lehigh University, Bethlehem, Penna.

19-22 **American Institute of Chemical Engineers,** Del Prado Hotel, Mexico City, Mexico

20-24 **Gordon Research Conferences,** cell structure and metabolism-secretion, Kimball Union Academy, Meriden, N. H.

24 **Parenteral Drug Assn.,** scientific meeting, Edgewater Beach Hotel, Chicago, Ill. (P.D.A., 1420 Snyder Ave., Phila. 45, Penna.)

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JUNE (Continued)

27-30 Toilet Goods Assn., annual convention, Poland Springs House, Poland Springs, Maine. (Kathryn Fitzpatrick, Americas Bldg., Rockefeller Center, N. Y. C. 20)

27 Gordon Research Conferences, proteins and nucleic acids (through July 1), New Hampshire School, New Hampton, N. H.

28 Oil Trades Assn. of New York, golf outing, Siwanoy Country Club, Bronxville, N. Y.

JULY

3-9 American Assn. Colleges of Pharmacy, annual convention, College of Pharmacy, University of Colorado, Boulder, Colo.

4-9 Society of Chemical Industry, annual general meeting, Bristol, England

11-15 Gordon Research Conferences, chemistry, physiology, and structure of bones and teeth, Kimball Union Academy, Meriden, N. H.

19-21 Western Packaging & Materials Handling Exposition, Pan Pacific Auditorium, Los Angeles, Calif. (Western Packaging Exposition, Clapp & Poliak, Inc., 341 Madison Ave., N. Y. C. 17)

AUGUST

1-5 Gordon Research Conferences, instrumentation, Colby Junior College, New London, N. H.

1-5 Gordon Research Conferences, steroids and other natural products, New Hampton School, New Hampton, N. H.

8-12 Gordon Research Conferences, food and nutrition, Colby Junior College, New London, N. H.

14-19 International Congress of Clinical Chemistry, Edinburgh, Scotland

14-19 American Pharmaceutical Assn., annual meeting, Shoreham and Sheraton-Park Hotels, Washington, D. C.

14-20 American Pharmaceutical Assn., annual convention, Shoreham-Sheraton Park, Washington, D. C.

15-19 American Veterinary Medical Assn., national meeting, Denver, Colo. (Brian M. Foster, A.V.M.A., 600 So. Michigan Ave., Chicago 5, Ill.)

15-19 Gordon Research Conferences, medicinal chemistry, Colby Junior College, New London, N. H.

15-19 Gordon Research Conferences, analytical chemistry, New Hampton School, New Hampton, N. H.

15-19 Gordon Research Conferences, toxicology and safety evaluations, Kimball Union Academy, Meriden, N. H.

15-25 International Symposium on the Chemistry of Natural Products, Australian Academy of Science, auspices of the Section of Organic Chemistry, IUPAC, Melbourne, Canberra, and Sydney, Australia

27 American Hospital Assn. (through September 1), Civic Auditorium, San Francisco, Calif.

28 International Pharmaceutical Federation, general assembly (through September 2), Copenhagen, Denmark

29 Gordon Research Conferences, cancer, Colby Junior College, New London, N. H.

SEPTEMBER

1-7 International Congress on Nutrition, International Union of Nutrition Scientists, Washington, D. C.

8 Pharmaceutical Advertising Club, luncheon meeting, Hotel Roosevelt, N. Y. C. (D. Lindsay—see above.)

11-16 American Chemical Society, national meeting, N. Y. C. (A.C.S., National Meetings Dept., 1155 Sixteenth St. N.W., Washington 6, D. C.

(Continued on page 428)

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SEPTEMBER (Continued from page 426)

12-14 Pharmaceutical Manufacturers Assn., International Section, The Greenbrier, White Sulphur Springs, W. Va. (Dr. Carl Bambach, P.M.A.—see above.)

15-16 Society of Cosmetic Chemists, seminar, Hotel Drake, Chicago, Ill. (S.C.C., E. 63rd Street, N. Y. C. 21)

15-18 Drug Chemical and Allied Trades Assn., annual meeting, Sagamore Hotel, Bolton's Landing, N. Y. (Helen L. Booth, D.C.A.T., One Liberty Street, N. Y. C. 3)

18-21 Federal Wholesale Druggists' Assn., annual convention, The Greenbrier, White Sulphur Springs, West Virginia (Ray C. Schlotterer, F.W.D.A., 2 Lexington Ave., N. Y. C. 10)

18-21 Packaging Machinery Manufacturers' Institute, annual meeting (P.M.M.T., Room 863, 60 East 42nd Street, N. Y. C. 17)

21 American Society of Perfumers, closed meeting (Dorothy A. Douglass, A.S.P., 630 Fifth Ave., N. Y. C. 20)

25-27 Pharmaceutical Council of Greater New York, drug and cosmetic show, Trades Show Bldg., N. Y. C.

25-28 American Institute of Chemical Engineers, Mayo Hotel, Tulsa, Okla.

26-30 Instrument Society of America, annual meeting and instrument-automation conference and exhibit, New York Coliseum, N. Y. C.

OCTOBER

1 Assn. of Clinical Pathologists, joint meeting with Assn. of Clinical Biochemists, Royal College of Surgeons, London, England

3-7 American Material Handling Society, meeting in conjunction with Canadian material handling show, Show Mart, Montreal, Que.

7 National Vitamin Foundation, symposium, Jewish Hospital of St. Louis, St. Louis, Mo. (Wm. Rubin, N.V.F., 149 East 78th Street, N. Y. C. 21)

10-12 Assn. of Official Agricultural Chemists, annual meeting, Shoreham Hotel, Washington, D. C.

10-13 Technical Assn. of the Pulp and Paper Industry, corrugated containers conference, Royal York Hotel, Toronto, Canada

13 Pharmaceutical Advertising Club, luncheon meeting, Hotel Roosevelt, N. Y. C. (D. Lindsay, P.A.C., Suite 608, 489 Fifth Ave, N. Y. C.)

14-20 National Wholesale Druggists' Assn., annual convention, Americana, Bal Harbour, Fla.

16-19 Pharmaceutical Manufacturers Assn., Financial Section, Boca Raton Hotel, Boca Raton, Fla. (Dr. Carl Bambach, P.M.A., 1411 K Street, Washington 5, D. C.)

16-19 Pharmaceutical Manufacturers Assn., Public Relations Section, The Greenbrier, White Sulphur Springs, West Virginia (Dr. Carl Bambach—see above.)

17-19 American Oil Chemists' Society, fall meeting, Hotel New Yorker, N. Y. C.

19 American Society of Perfumers, open meeting, Advertising Club, N. Y. C. (Dorothy A. Douglass, A.S.P., 630 Fifth Avenue, N. Y. C. 20)

19-21 Parenteral Drug Assn., annual convention, Statler Hotel, N. Y. C. (P.D.A., 1420 Snyder Avenue, Philadelphia 45, Penna.)

19-29 International Plastics Exhibition, "macroPlastic," Exhibition Halls, Utrecht, The Netherlands.

23-27 National Assn. of Retail Druggists, Municipal Auditorium, Denver, Colo.

25 Assn. of Consulting Chemists & Chemical Engineers, annual meeting and dinner, Hotel Shelburne, N. Y. C. ●

(*Continued from page 422*)

2,922,747—Am. Chicle—Oral Deodorant.
2,922,749—Miles Labs.—Enzymes.
2,922,785—H. Levin—3-Benzal Dihydropyridines.
2,922,787—E. A. Ferguson, Jr.—Orotic Acids.
2,922,788—Parke, Davis—Phenylpiperazines.
2,922,789—Am. Home Products—N-Propylamides.
2,922,790-3—Olin Mathieson—Pyridine Derivatives.
2,922,797—Merck—9α-Halo Allopregnanes.
2,922,817—Am. Cyanamid—Deoxyanhydrotetracyclines.
2,923,661—Irwin, Neisler & Co.—Trichloroethylidenimine.
2,923,662—White Labs.—Appetite Depressant Resin.
2,923,664—Johnson & Johnson—Hemostatic Products.
2,923,704—Hoffmann-La Roche—Cycloamylose Sulfates.
2,923,709—G. D. Searle—Epoxy Methyl Estratetraenes.
2,923,710—Ciba—Bis-1, 1-Dipyridyl Olefins.
2,923,711—Abbott Labs.—Benzhydrylidine Tropene.
2,923,712—Ciba — Isopentyloxy-Phenyl Pyridyl Phenyl Thiourea.
2,923,713—Hoffmann-La Roche—Benzyl and Methoxy benzyl Hydrazides of Isonicotinic Acid.
2,923,714—Hoffmann-La Roche—Picolinoyl Benzyl Hydrazine.
2,923,720, *2,923,722*—Upjohn—Alkyl Pregnenes.
2,923,723—Upjohn—Alkyl Cortisone.
2,924,596—Syntex—Allopregnenes.
2,924,603—Smith, Kline & French Labs.—Aralkylbenzmorphans.
2,924,611—G. D. Searle—Oxygenated Pregnadiene Dione.

PERFUME SPECIALTIES

(*Continued from page 329*)

these facts have not filtered down to the average executive.

Gentlemen, try diverting a bit from your advertising budget to the product itself. Give your perfumer/supplier the financial "freedom" to do a brilliant job. Relax your prejudices and let him liberally use someone else's specialties if he thinks they have merit.

Foreign perfumers are not much better than local talent. But they are more aware of the need of showmanship in fragrance work.

CONTROLLED-FLOW APPLICATOR

(*Continued from page 347*)

has a bead on the inside which fits around the rim of the applicator, providing a double seal with the valve shut-off. The inside of the cap does not touch the pad.

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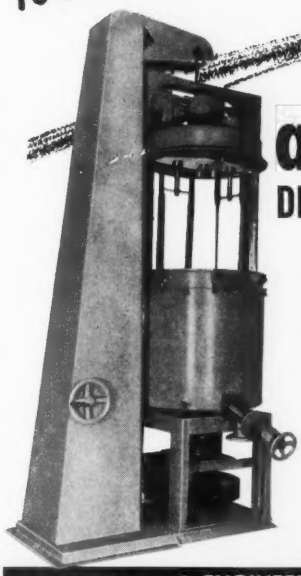

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